The growth and size of the Brazilian mutual fund industry

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This article describes the evolution of the Brazilian mutual fund industry, its regulatory framework, organization, types of investors and managers, economic environment and its relative growth. It shows the evolution of this industry in Brazil and its idiosyncrasies providing a deeper look into one of the largest emerging market mutual fund industries. It emphasizes the growth of independent managers with more complex assets and sophisticated strategies that resemble international hedge funds. There are many popular and academic explanations for the mutual funds growth, some of which were tested in this article using a time series framework. The results suggest that financial market innovation and market risk are significant variables in explaining growth. Common variables like economic growth, regulation and taxes were not found to be statistically significant. We conclude with a comparison between the evolution of the Brazilian and US mutual fund industries.

1. Introduction

The main function of financial markets is the inter-temporal transfer of resources, allowing agents to use income earned during their productive life to have a better retirement, implement personal projects, and face financial emergencies. Moreover, financial markets facilitate the financing of large projects and the mitigation of financial risks. In order to handle all these tasks, numerous financial instruments have been created, like derivatives in recent years, that lead to a huge growth in the size and complexity of financial instruments. As well there is the globalization of financial markets. All this development poses great difficulties for individuals directly taking care of their personal investments, making investment services increasingly important in modern financial markets. To some extent, mutual funds offer a great service to modern societies by providing professional money management, higher liquidity, lower transaction costs, and access to more markets. These are solid economic reasons that justify the enormous absolute and relative growth of the mutual fund industry around the world.

This is a worldwide trend. According to Klapper et al. (2004), the world mutual fund industry, experienced spectacular growth in the 1990s, due in part to globalization, the internationalization of financial institutions, the strong positive performance of equities and fixed income securities and, possibly, population aging. Brazil has followed this trend, with increasing financial market sophistication in addition to relative and absolute growth of the mutual fund industry.

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This article describes the evolution of the mutual fund industry in Brazil as well as its idiosyncrasies, and takes a deeper look into one of the largest emerging market mutual fund industries. It is a contribution to the literature on financial development in emerging markets, as well as the literature on mutual fund growth and also presents a detailed description of the Brazilian mutual fund industry. We also perform a time series analysis to investigate some of the reasons for the relative growth of the mutual fund industry. Interestingly, several reasons for the relative growth pointed out in Khorana et al. (2004) were not found to be significant here. However, the importance of financial innovation, already suggested by several authors (Fink 2008, Klapper et al. 2004, Pozen 1998, and Ramos 2009) was found to be significant in explaining the relative growth of the mutual fund industry in Brazil.

In section 2, we elucidate the industry's history and growth; in the third section, we define the main asset classes in Brazil; in the fourth section, we describe mutual fund management in Brazil; in the fifth section, we delineate the investors; in the sixth section, we present their recent performance; in the seventh section, we endeavor to explain the industry's size and relative growth; and in the last section, we conclude with the prospects for this industry in Brazil and compare it to the world's largest mutual fund industry in the United States.

2. Growth and history

The current Brazilian financial system is based on law 4,595, dated December 31, 1964, that created the *Conselho Monetário Nacional* (CMN, National Monetary Council) and the Brazilian Central Bank (BCB), and law 6,385, dated December 02, 1976, that established the *Comissão de Valores Mobiliários* (CVM), equivalent to the Securities and Exchange Commission (SEC) in the USA. Since then, few changes have been made to the structure of the financial system. An important article of the last Constitution promulgated in 1988, Article 192, deals with the financial system and is yet to be implemented. It has the potential to change the current financial system.

The Brazilian financial system is composed of a set of regulatory institutions and a set of financial companies which sell a variety of products to individuals, private companies, and the government. The regulatory institutions are:

- The Brazilian Central Bank (BCB), which takes care of monetary control and banking supervision, acting directly in the financial market with open market operations, and issuing new regulations for the financial system through what it calls *resolução*, *circular*, or *comunicado*;
- The CVM, which regulates capital markets and issues its decisions using what it calls *instrução*. It can also intervene in financial market transactions to enforce regulation;
- The *Superintendência de Seguros Privados* (SUSEP), which is responsible for supervising and regulating insurance companies; and,
- The *Secretaria de Previdência Complementar* (SPC), which is responsible for supervising and regulating the private retirement system.

All these government institutions work closely to protect investors and improve savings and investment conditions in Brazil. Financial companies are divided into six groups:

- Banking institutions, that are allowed to receive demand deposits, thereby having the potential to affect directly the money supply and monetary policy;
- Non-banking financial institutions, which can provide loans but cannot receive demand deposits;
- Auxiliary institutions, all others not classified above such as stock brokers, stock exchanges, and investment advisors;
- Retirement companies, which can be closed pension funds, open pension funds, insurance companies, and capitalization companies;
- Asset management companies, which manage mutual funds and investment "clubs"; and,
- Custody and settlement companies.

In practice, the main financial companies in Brazil are organized into conglomerates that have national distribution, and various types of financial companies, from banks to asset management companies. The banking system is also very concentrated with enormous participation of government banks. As of December 2008, the ten biggest banks had 83% of the total banking assets, and four government banks (*Banco do Brasil*, *Caixa Econômica Federal*-CEF, *Banco Nacional de Desenvolvimento Econômico e Social*-BNDES and *NossaCaixa*) had 34% of the total.

2.1 Mutual funds[2]

The first mutual fund, *Fundo Crescinco*, was created in Brazil in 1957, and until 1970 only 11 funds existed. In 1959, the Ministry of Finance issued the first official document to address mutual funds, *Portaria nº 309*. In 1970, with the purpose of protecting investors, the BCB issued Resolution nº 145, which was the first government regulation to establish broad guidelines regarding the constitution, functioning and management of mutual funds in Brazil. Because there were no fixed income funds at that time, it targeted equity funds and required that a minimum of 60% of the assets under management (AUM) be invested in equities. This legal framework established several rules that remain in place to this day, such as requirements to disclose managers' qualifications, to create bylaws for the fund, to disclose the portfolio holdings, and to limit the amount invested in assets issued by any company linked to the fund manager or the fund management company. The funds' AUM grew substantially until 1971 in tandem with rallies in stock markets, however, mutual funds lost much of their asset value with the large fall in stock markets which occurred during that decade (the value of stocks fell by 90% from its peak) and were forgotten until the 1990s.

It is worth mentioning a special fund, *Fundo 157*, created in 1967 by the *Decreto-Lei nº 157*, that aimed to stimulate investments in equities with a 10% reduction in income tax owed by individuals and private companies, provided that the monies were invested in funds. This special fund had more impact on equities markets prices than mutual funds had on this market. Its AUM reached three times that of mutual funds by the end of the 1970s.

In 1984, BCB's Resolution nº 961 created two categories of mutual funds: equity mutual funds, which were required to hold a minimum of 70% in equities, and fixed income funds, required to have a minimum of 60% in fixed income securities issued by the government and a maximum of 10% invested in stocks. In 1985, Resolution nº 1023 transformed all the *Fundo 157* funds into Equity Mutual Funds.[3]

In 1986, Resolution nº 1199 created the Short Term Investment Fund, aimed at investments of less than 30 days. This was a period of high inflation, and even hyperinflation between 1986 and 1994, a period when most investments were very short term. Most transactions with final investors had a one day maturity, resulting in their being known as "overnight" deals, and they used repurchase agreements (repos) with government bonds as guarantees.

At the beginning of the 1990s, the two economic plans that were passed with the intention of controlling inflation, Collor I and II , caused major changes in the value of financial assets without taming inflation. As a part of these plans, the government instituted new regulations (Resolutions 1787 in 1991, and 1912 in 1992), which created the *Fundo de Aplicação Financeira* (FAF), the *Fundo de Renda Fixa* (FRF), the *Fundo de Renda Fixa-Curto Prazo* (FRF-CP) and the *Fundo de Commodities*, all of which absorbed the Fixed Income Fund and the Short Term Investment Fund that had been created in 1984 and 1986. These resolutions also transferred the supervision and regulation of equity funds from the BCB to the CVM. The *Fundo de Commodities* was created as a vehicle for commodity investments, however, the use of derivatives resulted in it becoming a vehicle for other types of investments. In December 1994, the BCB authorized this fund to invest up to 100% of its assets in Government Bonds. Another important regulation was passed in 1990: Law 8021 which for tax reasons prohibited the issuance of or transaction with any kind of bearer security.

In 1994, another economic plan, the Real Plan, was implemented in an attempt to tame inflation. It finally succeeded in controlling the run-away inflation that had devastated the country for over a decade. With the objective of increasing financial investment maturity, the 1995 Resolution 2183 created the *Fundo de Investimento Financeiro* (FIF) and a fund of the funds of FIF, known as *Fundo de Aplicação em Cotas de FIF* (FACFIF), which absorbed all existing fixed income funds. They both were subject to compulsory deposits in the BCB that decreased their returns. The funds were offered on a "very" short term basis (*Curto Prazo* - CP), of 30, 60 or 90 days, and they were called FIF-CP, FIF-30, FIF-60 and FIF-90, respectively. The smaller the stated period, the greater the compulsory deposit at the BCB. FIF-60 and FIF-90 were free of the compulsory deposits; therefore if the investor kept the money invested for at least 60 days, he would receive all the returns generated by the portfolio. In June 1999, the compulsory deposit requirement was eliminated and the fixed income funds were denominated only as FIF and FACFIF. Tax incentives now were used to keep money invested for longer periods of time. A tax called *Imposto sobre Operações Financeiras* (IOF) was charged on the returns of investors whenever the funds were withdrawn before 30 days.

Beyond the more traditional fixed income and equity funds, several other specific funds were regulated by the BCB, but all of them have had small AUMs:

- The *Fundo de Capital Garantido* (FCG), a fixed income fund which participated in the stock market upside via call options;

[2] Mutual funds are called Investment Funds in Brazil. More details regarding mutual fund constitution and regulation may be found in the actual regulations cited in this section.

[3] According to Brito and Neves (1989), the poor performance of this type of fund supported the decision to eliminate them.

- The *Fundo de Investimento no Exterior* (FIEX), an onshore fund allowed to invest abroad;
- The *Fundo Offshore*, a fund established by a local asset manager outside the country;
- The *Fundo Extramercado*, a fund that manages money on behalf of government entities;
- The *Fundo de Investimento em Direitos Creditórios* (FIDC), a fund that invests in credit rights; and,
- The *Fundo de Investimento em Empresas Emergentes* (FIEE), a fund that invests in emerging/small companies.

In parallel with the BCB action on fixed income funds, the CVM also made several changes in equity mutual fund regulation. Until 1994, these funds were denominated only as *Fundo Mútuo de Ações*. In 1991 and 1992, via *Instruçãoes* 148 and 177, the CVM created the *Fundo Mútuo de Investimento em Ações* (FMIA), the *Fundo Mútuo de Investimento em Ações – Carteira Livre* (FMIA-CL), and the *Fundo de Investimento em Cotas de Fundo Mútuo de Investimento em Ações* – FICFMIA. The first one was a pure equity fund, the second one was allowed to carry more derivatives in its portfolios, and the last one was a fund of funds. Like the BCB, the CVM also allowed few specific funds within its purview:

- The *Fundo Mútuo de Ações Incentivadas*, a fund that invests in specific stocks and has government incentives;
- The *Fundo Setorial de Investimento em Ações*, a fund that invests in stocks of specific sectors;
- The *Fundo Private Equity*, a fund with the sole purpose of investing in private equity;
- The *Fundo de Investimento Imobiliário* (FII), a fund that invests in real estate; and,
- The *Fundo de Investimento em Índice* – FI, a fund that tracks a market index.

Until 1994 when the hyperinflation ended, fixed income funds were a simple mechanism for short term investment. After 1994, bonds gained duration and new derivative instruments were launched, increasing the breadth and depth of the Brazilian financial market. Consequently, the demand for professional money management offered by mutual funds increased. Moreover, several changes in regulation helped the momentum in the mutual fund industry.

Funds such as *Fundo de Commodities*, FMIA-CL and FIF, that had fewer restrictions on investments in derivatives, provided the legal framework for the creation of more sophisticated funds with leveraging and investments in several asset classes. At the same time, new funds were launched with strategies such as inflation- and USD-indexed, hedge, macro and derivatives. Most of these funds were known as “derivative fund,” and became quite popular for their leveraging and intense use of derivatives contracts which allowed them to invest in several asset classes at the same time. This moment marked the appearance of more sophisticated money managers, though not without a little trouble along the way: *Linear Investimentos*, run by former BCB president Ibrahim Eris, launched several leveraged funds and initially had great success, but succumbed to the Asian crisis of October 1997.

Other crises disturbed the mutual fund industry and drove the authorities to adopt new regulations to protect investors. In November 1997, with Resolution 2451, the BCB enforced financial institutions’ separation of their asset management activities from the rest of the bank's activities, officially creating the “Chinese Wall” in Brazil. At the beginning of 1999 (via *circular 2893*) right after the substantial depreciation of the Brazilian currency (the Real) and the huge losses in a few derivatives funds, the BCB and the CVM launched another new regulation. The BCB issued a norm mandating substantially greater disclosure of information by funds and also making sure that investors acknowledged, in writing, their awareness of the funds’ risks. The CVM (via *Instrução 302*) created the *Fundo de Investimento em Títulos e Valores Mobiliários* (FITVM) and the *Fundo de Investimento em Cotas de FITVM* (FIC-FITVM), defined the qualified investor and increased fund information disclosure. FITVM incorporated the latter FMIA and FMIA-CL, and FIC-FITVM incorporated FICFMIA, a fund of funds. The qualified investor was defined as any financial company, insurance company, or pension fund with assets above BRL5 million, and any individual investor with more than BRL250,000 invested in the fund or over BRL5 million in personal financial assets. The funds were required to send investors quarterly information regarding portfolio holdings, quota values, investment policies, and leveraging policies among other disclosures. This led to more transparency but also to higher maintenance costs for the funds.

Another crisis occurred in 2002, known as the “mark to market crisis” (see Brito and Taciro, 2003). At that moment a small political crisis arose in proximity to the presidential election. Some candidates defended a public debt default, which immediately created difficulties for the government in obtaining debt financing. Interest rates rose and market values fell, generating losses in funds which until then had been considered extremely safe. This was the case for the largest type fixed income fund, *Fundo DI*, which was offered without proper mark to market. In May

2002, these funds were required to correct its mark to market which revealed investors' losses, consequently creating a crisis of confidence in fixed income funds that caused a 15% withdrawal in this fund category.

Despite these crises, the mutual fund industry continued to grow in size and sophistication. In 2004, the CVM issued *Instrução 409* to establish new rules for the entire industry. It better detailed the responsibilities of several participants in this industry; defined and increased the responsibilities of the administrator versus the manager, who became responsible for investment policy, risks and portfolio concentration limits; defined the distributor's responsibility (now responsible for taxes that investors should pay on their returns); and created a presentation standard for fund performance (12 months of returns and AUM), and fund starting date, as well as administration and performance fees. It also defined the following official classification of funds:

- The *Fundos de curto prazo*, a short term bond fund where the bonds had to have a maximum maturity of 365 days;
- The *Fundo referenciado*, a fund which would follow a specific benchmark;
- The *Fundo de renda fixa*, a fund which would invest a minimum of 80% of its portfolio in fixed income assets;
- The *Fundo de ações*, a fund that would invest a minimum of 67% of its portfolio in stocks;
- The *Fundo cambial*, a fund that would invest a minimum of 80% of its portfolio in assets indexed to the FX rate;
- The *Fundo de dívida externa*, a fund that would invest a minimum of 80% of its portfolio in Brazilian foreign debt; and,
- The *Fundo multimercado*, a fund that would invest in several asset classes.

The *Instrução 409* was changed slightly by *Instruções* 411 and 413 in 2004, 450 and 456 in 2007, and 465 in 2008. With these changes, funds now were allowed to invest directly up to 20% of their portfolios abroad, and in cases of funds sold to qualified investors, 100%. These measures also allowed funds to hold 100% of their assets in non-government bonds (private credit).

The current structure and the main types of participants in the Brazilian mutual fund industry are outlined in Figure 1.

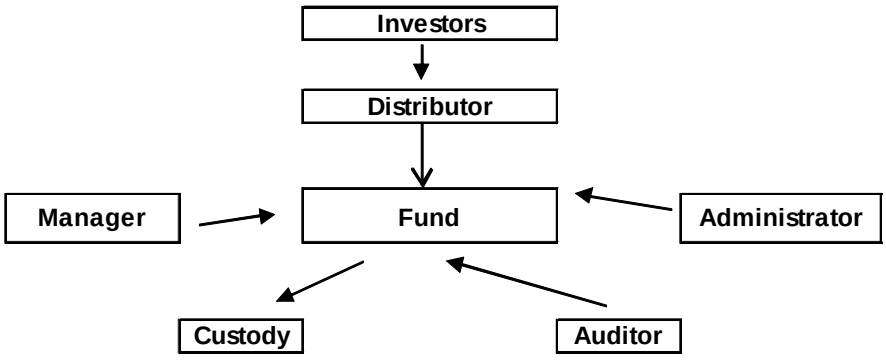

Figure 1. The Brazilian Mutual Fund Industry organizational structure.

The items below provide a more detailed description of each role:

- The **Administrator** is the legal entity authorized by CVM and is responsible for the set of services, such as control and processing of quotas, mark to market, etc., relating directly or indirectly to the functioning and the maintenance of the fund. It also is responsible for the hiring of other services providers, such as auditors, (money) managers, custody agents, and distributors;
- The **Auditor** is responsible for auditing the fund account;
- The **(Money) Manager** is responsible for portfolio asset allocations and must be registered with the CVM;
- The **Custodian** is responsible for the custody and transfer of the fund's assets; and,

- The **Distributor** is the intermediary hired to sell fund quotas. He is also responsible for client records, distribution of the fund prospectus to clients, explaining to the clients any demands from CVM, controlling and registering all client transactions regarding the fund, maintaining all documents about clients, communications regarding investor meetings, and collecting the taxes owed by clients.

Besides the official regulations, the industry association, the National Association of the Investment Banks (*Associação Nacional dos Bancos de Investimento* - ANBID), has established several prudent rules and mechanisms for funds to follow that allow greater transparency in the mutual fund industry. Such rules are contained in the ANBID code of self-regulation for the mutual fund industry. In addition, there are several vendors of risk management systems and data, but not many external providers of mark to market prices since most companies use internal models to set their mark to market.

2.2 Comparison with other assets

In the 1970s and 1980s, the funds' total AUM was very small compared to other financial investments (i.e., 1% of M4 in 1979). Even with the creation of fixed income funds in 1984, the funds' total AUM continued to be very small (4% of M4 in 1984). In 1990 with Collor Plan I, many financial assets were frozen and the size of the mutual fund industry shrank to 0.7% of M4 right after implementation of the plan. However, in 1991 and the following years, the industry grew again, reaching 18% of M4 by the end of 1993. One possible explanation for this growth was the end of bearer securities and the creation of new fixed income funds. After the "Real" Plan and the control of inflation in 1994, assets of the mutual fund industry grew substantially, reaching an unprecedented level. Table 1 show this evolution and compares the funds' AUM, as well as the total assets of savings accounts, federal government bonds, and private bonds to stock market capitalization and monetary aggregates M1 and M4. The data begin in 1995 since only sparse data are available before this date.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
M1	**29**	**29**	**42**	**42**	**35**	**38**	**36**	**31**	**38**	**48**	**62**	**82**	**131**	**96**
Savings (a)	65	69	87	89	62	57	51	40	50	60	72	88	133	116
Private Bonds	82	80	83	79	56	50	51	42	55	77	114	138	176	244
Government Bonds	112	170	229	268	232	261	269	176	253	305	419	512	694	546
M4 (b)	**258**	**310**	**352**	**380**	**308**	**334**	**326**	**229**	**332**	**418**	**561**	**729**	**1.069**	**956**
Fixed Income Funds (c)	65	105	100	112	111	139	138	91	162	204	279	372	516	393
Equity Mutual Funds (d)	2	5	13	11	12	13	11	9	14	18	26	41	94	49
Stock Market Cap. (e)	152	217	255	161	229	226	186	124	234	341	482	723	1.399	589
a/b	25%	22%	25%	23%	20%	17%	16%	17%	15%	14%	13%	12%	12%	12%
a/c	101%	66%	87%	80%	56%	41%	37%	43%	31%	29%	26%	24%	26%	29%
d/e	1%	2%	5%	7%	5%	6%	6%	7%	6%	5%	5%	6%	7%	8%
(c+d)/b	26%	35%	32%	32%	40%	45%	46%	**44%**	53%	53%	54%	57%	57%	**46%**

Table 1. Total assets of the main types of investments and monetary aggregates in USD billion, as of December. The last four lines show their relative sizes. Source: BCB monthly bulletin.

Fixed income funds had an annual asset growth of 15% between 1995 and 2008. They are a competitor for savings accounts and have surpassed substantially the total AUM for this type of investment. Although the balance of both types of investments was the same in 1995, by 2008 the savings account balance was only 29% of the fixed income funds. Comparing them to M4, saving accounts additionally had a large decrease, from 25% to 12%, while equity funds had an annual growth of 28%. The relationship between equity funds to total equity market capitalization grew from 1% to 8%, suggesting a transfer from direct investment in stocks to indirect investment via funds. In total, funds grew from 26% to 46% of M4 during this period, reaching a maximum of 57% in 2007. It should be noted that during the several financial crises that happened during this period (for instance, the mark to market crisis in 2002 and the subprime crisis in 2008), this percentage decreased when compared to the growth of investments in private bonds.

The number of mutual funds in Brazil is huge, 8,266 funds in December 2008, but only 34% of them are not exclusive for one investor, and of those, 49% are funds of funds, called FIC in Brazil. Many fund managers created several FICs, all with the same strategy, but with the purpose of charging different administrative fees or to market to different groups of investors. Sometimes one fund is a master fund and the other funds are only feeders. This is one reason why the number of funds gives a distorted view of the industry's size in Brazil; the industry should be tracked instead by the AUM.

2.3 Comparison of the mutual fund industry with other financial industries in Brazil

When comparing Brazil's mutual fund industry to other financial sectors, the funds industry has gained importance. Table 2 shows the evolution of mutual funds AUM versus savings and commercial banks' total assets.

	1996	1999	2002	2005	2008
Commercial Banks	369	286	239	924	1.640
Savings	69	62	40	72	116
Mutual Funds	110	123	100	305	442

Table 2. Total assets of the main financial intermediaries in Brazil, balances in USD billion as of December. Source: BCB monthly bulletin.

This table shows the considerable growth of the banking and mutual fund industries since 2002, 13% and 12% per annum respectively. They both have increased their market share while savings, though growing in absolute numbers, have decreased as a percentage of all assets.

2.4 Comparison of the Brazilian mutual fund industry with other countries

In the USA, the pattern is quite similar. Table 3 shows the huge growth in bank assets and mutual funds AUM of 8% and 12% annually, respectively. The relative participation of the funds has grown to 38% at the expense of banks and savings institutions.

	1996	1999	2002	2005	2007	2008
Commercial Banks	4,710	5,994	7,077	9,040	11,176	12,437
Savings	1,032	1,151	1,358	1,838	1,861	1,532
Mutual Funds	3,526	6,846	6,391	8,905	12,021	9,601

Table 3. Total assets of the main financial intermediaries in the USA, balances in USD billion, as of December. Source: ICI

Tables 2 and 3 show both absolute and relative growth of the mutual fund industries in both countries. In the USA, this growth is even larger than the growth of the banking industry. This worldwide trend and its economic reasons will be discussed in section 7.

In Table 4, we compare the Brazilian mutual fund industry[4] to the rest of Latin America, the BRIC[5] countries, the USA, and the rest of the world. The world annual growth was 14% in this period. In the BRIC countries this rate was 24%, mostly explained by the inclusion of China in this statistic in 2007, as well as the above average growth of Brazil.

	1996	1999	2002	2005	2007
Brazil	104	118	97	303	615
Latin America	109	148	137	369	723
BRICs	114	131	117	346	1.165
USA	3.526	6.846	6.391	8.905	12.021
Worldwide	6.101	11.416	11.324	17.771	26.199

Table 4. Mutual fund assets worldwide, balances in USD Billion, as of December. Source: ICI.

Table 5 shows Brazil's mutual fund assets as a percentage of the total assets for each other category. Brazil has been responsible for most of the assets in Latin America and has grown in relation to the rest of the world.

[4] The number for Brazil does not include assets in funds of funds, which avoids double-counting, but it does include exclusive funds (34%) and funds reserved only for institutional investors (27%). These two types of funds are special vehicles used to decrease taxes.
[5] Brazil, Russia, India and China.

	1996	1999	2002	2005	2007
Latin America	95.6%	79.4%	70.6%	82.2%	85.1%
BRICs	91.5%	89.9%	82.3%	87.6%	52.8%
USA	2.9%	1.7%	1.5%	3.4%	5.1%
Worldwide	1.7%	1.0%	0.9%	1.7%	2.3%

Table 5. Mutual fund assets in Brazil as a percentage of total assets for each region from each line in Table 4, as of December. Source: ICI

These numbers show the increasing importance of the mutual fund industry not only in Brazil but also worldwide. Because of this volume of resources, the mutual fund industry has a great impact on individual savings and stock markets of the entire world. According to data from December 2007, 75% of USA mutual funds belonged to individual investors and these funds held 23% of individuals' financial assets. Those assets corresponded to 27% of the capital in public companies and 10% of federal government bonds. In Brazil at the same time, funds held 42% of government debt, 23% of debentures and 6% of stocks.

2.5 Government taxes

Our objective in this section is only to describe the taxation of the financial market. There are three taxes charged on Brazilian financial markets: the *Imposto sobre Operações Financeiras* (IOF), the *Imposto de Renda* (IR), and the *Contribuição Provisória sobre Movimentação Financeira* (CPMF). The way taxes are calculated and the percentages charged have changed over time and therefore it is always necessary to verify the most recent regulations.

The **IOF** is a tax charged to individuals and non-financial companies on fixed income investments and cannot be compensated. Is it collected on the investment returns and it is higher the shorter the term of the investment, making it a mechanism to extend the tenor of the investment.

The **IR** can be charged directly or indirectly on the income tax statement. For individuals and non-financial companies this tax is collected directly on the financial income generated. The IR charged on equity return is 15% and should be paid only when the stock is sold. For fixed income investment the IR tax rate varies according to whether it is a short (less than one year) or long (more than one year) term investment.

The **IR** collection on fixed income funds occurs every six months (always on the last day of May and November), or when the investment is withdrawn, whichever occurs first, at a rate of 15%. This semi-annual collection on fixed income funds is known as a "quotas eater." If the investment has a term of less than 24 months, an additional IR tax is charged.

The **CPMF** was created in 1993 to exist for a year (until 1994) then was reestablished in 1997 and existed until 2007, and was charged at the rate of 0.38% on any financial transaction. This tax ceased to exist in 2008, but no one knows if it will come back!

Taxation has been an important factor in the evolution of the mutual fund industry. The government's need, on the one hand, for fiscal and monetary policies when imposing taxes has to be balanced against investors' concerns, on the other hand, with their investments' after-tax returns. From the fiscal policy point of view, taxation in the financial market is an important source of revenue for the Brazilian government, having been responsible in 2007 for 11% of all government revenues. Regarding monetary policy, monetary authorities often establish different taxes in accordance with investment maturity in order to extend the tenor of the fixed income instruments (most of them government bonds). The one who suffers from these governmental demands are the investors who get lower net returns and the fund managers and administrators that have to adjust all their systems to the frequent regulatory changes.

The tax effectively paid by any investor varies according to the entity subject to the tax, the term of the investment and the type of investment. Entities can be individuals; foreign investors; non-financial companies; and institutional investors, which can be: mutual funds, pension funds, insurance companies, or any financial company. An investment is considered short term if it matures in less than one year, or long term if it is held for more than one year. There are two types of investments: direct investments, where the entity places monies in equities and bonds; and, indirect investments, where the entity places monies in mutual funds.

Taxes are levied on a fund's NPV rather than on its assets and differ depending on the type of fund - equity, fixed income, retirement or any other special fund. Each type of fund also can have a specific tax rate.

Taxes on financial incomes can be levied directly on investment returns, or indirectly based on the income statements of any of the above entities. The tax can be definitive or subject to compensation, in which case an eventual loss can be used to decrease some gain at a future date, diminishing the total tax due.

Given the several investment alternatives, tax rates, and entities, the evaluation of the tax impact on any financial decision must take into account the entire set of taxes and not only what is being charged directly in the financial investment.

The flow of funds in and charges for a mutual fund in Brazil, including government taxes and fund fees, are shown in Figure 2.

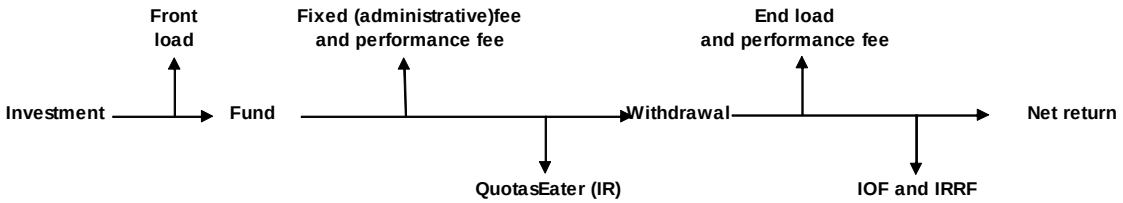

Figure 2. The flow of charges, taxes, and net return on investments in Brazilian mutual funds.

Foreign investments have their own tax rules. The current tax system distinguishes the investor origin. Countries that do not tax income or have tax rates lower than 20% are considered "favored," all other countries are considered "not favored." The Brazilian government applies a lower tax rate for investments originating in countries "not favored" and the tax rate can reach zero for investments in equities.

Taxation has had an important role in mutual fund development, sometimes stimulating its growth, other times constraining it. It has a great potential to modify the evolution of this industry and must be followed with care. Taxation is considered neutral when the same rates are applied to proceeds from direct purchases of stocks and bonds or to proceeds from mutual funds with the same type of assets. However, the higher charging frequency may lead to a higher total tax payment, as is the current case for the direct purchase of bonds *vis a vis* the investment via mutual funds, which may therefore give a tax advantage to mutual fund investment.

2.6 Growth

Records indicate that although Brazil's mutual fund industry has grown robustly and consistently, in periods of crisis (2002, for example) it has lost market share to traditional investments, either due to a loss of value or to investor withdrawals. Possible reasons for this growth are increasing market sophistication, the growth of derivatives, and globalization, all of which have generated numerous opportunities that are difficult for individual investors to access directly but are readily available to them through mutual funds. The changes in regulations have ensured stronger investor protection and greater information disclosure, although at a cost to mutual fund companies. The CVM, beyond establishing regulations, also has acted forcefully in funds supervision and investor protection. Despite the increased costs and greater restrictions, the relative growth of the mutual fund industry still can continue through the transfer of assets from savings accounts to fixed income funds and by changing from the direct purchase of equities to the purchase of equity mutual funds.

In the following section we map the investment possibilities in Brazil in order to understand better the structure of the mutual fund investment style adopted in this country.

3 Asset classes

The term asset class is used largely by academics and practitioners in financial markets. It was defined by Sharpe (1992) as the result of a simple mapping of all securities into a small number of groups that constitute the asset classes. This categorization simplifies the life of the investor or money manager who can track and evaluate an asset class instead of following each individual security. For example, when making an asset allocation, the investor chooses the asset classes and once he has determined how much to invest in each class, he selects specific securities

belonging to those classes. Risk evaluation also can be based on asset classes: Covariance can be calculated on top of the asset classes' returns and knowing the portfolio allocation for each class, the risk calculation is straightforward. According to Sharpe (1992), asset classes are a partition of the universe of all securities available in the market and should meet the following conditions: (1) be exhaustive, that is, include the largest number of securities possible; (2) be mutually exclusive, so that each security belongs to only one class; and, (3) be relevant, i.e., the class returns should be "different" from each other and the returns of any one class should not be replicated by any other class.

There are two ways to define asset classes in any market:

a) A "bottom up" analysis of all securities available, checking the return on each security and grouping the securities according to conditions (1) to (3) above;
b) A "top down" analysis, which consists of grouping all securities according to common characteristics, all of which should have an impact on the returns.

Alternative (a) is impracticable due to the enormous number of securities available in the market. But the second alternative (b) is much simpler since it is sufficient to identify common characteristics in securities that can generate different returns.

To follow alternative (b), one has to list separately all existing securities. An initial separation can be made between fixed income securities and equities that have a distinct pattern of return. The Brazilian equity market does not differ significantly from any other country and the equity asset classes can be subdivided in (a) value and (b) growth; based on sectors; or (a) high liquid, (b) low liquidity, (c) private equity, etc.

Regarding fixed income funds, one has to understand the idiosyncrasies of the Brazilian economy that resulted in the creation of fixed income market rules which are very different from those in the rest of the world. The separation of securities can be based on: (i) indexation, (ii) duration, (iii) credit risk, (iv) liquidity, or (v) outstanding volume. Once the universe of securities has been separated according to one of these criteria, one should identify the returns for each group and verify whether condition (3) is satisfied. The returns of each group can be obtained from a market index. In the next section we analyze Brazilian financial markets to identify the asset classes based on a top down analysis.

3.1 Brazilian financial markets

The economic environment in which mutual funds have prospered in Brazil is marked by a strong governmental presence in the availability of market securities. As a consequence (or maybe because) of the inflationary situation and deficits, the government is by far the largest issuer of fixed income securities in Brazil. That said, the returns and the risks generated by fixed income investments depend, at the end of the day, on the returns and risks of the government bonds.

Brazil's financial history also is marked by high inflation (see Goldman 1986), even hyperinflation between 1986 and 1994, which has lead the financial market to implement several mechanisms aimed at protecting investors and surviving. During these times, maturities were very short term and there even were periods during which a large proportion of the transactions in fixed income securities matured in only one business day for which reason they were called "overnight." This type of deal resulted in the creation of a benchmark, called *Certificado de Depósito Interbancário* (CDI) that was based on the one day interbank transaction rate and was announced every business day. In 1987, the government created a bond called *Letra Financeira do Tesouro* – LFT, that payed the average of the one day repurchase market rate based on government bonds, known as *taxa selic* or simply, the selic rate. Due to arbitrage between the repo market and the interbank market, both rates, the selic rate and the CDI, are very close and therefore the CDI has become a benchmark for investments in LFTs. Even after controlling inflation in 1994, the government has continued to issue LFTs and the CDI has continued as the benchmark for this bond. Moreover, the CDI rate has been used as the basis for derivatives contracts traded at the BM&F,[6] especially fixed income SWAPs and interest rate futures.

In June 1996, the conduct of monetary policy changed with the creation of the Committee of Monetary Policy (*COPOM* in Portuguese). This committee is in charge of establishing the monetary policy direction and the short term interest rate charged by the BCB, similar to the USA Federal Reserve basic interest rate. As a result, the BCB started to have a target for the selic rate, the same one that adjusts the value of the LFT. In addition to the LFT bond, which is indexed by the same selic rate, the government also sells bonds with fixed interest rates as well as bonds indexed to the US dollar or indexed to inflation rates. Whenever the BCB increases the interest rate the value of the

[6] The BM&F is the São Paulo Futures Exchange.

Security	Year 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Federal Government Bonds	73.028	111.554	169.531	228.869	267.941	232.022	261.204	269.016	176.416	253.378	305.345	418.677	512.223	694.060	545.819
M1	26.918	29.299	28.677	42.425	41.952	35.088	38.040	36.087	30.530	37.962	48.216	61.874	81.576	131.050	96.071
State and Muni. Bonds	8.104	8.716	14.488	11.432	10.475	6.395	968	1.101	544	189	239	323	63	85	-
Privatization Currency	7.004	8.442	12.777	14.123	18.110	11.724	10.253	9.260	4.160	-	-	-	-	-	-
Time Deposits (CDB)	74.279	53.472	77.238	77.623	73.693	52.971	46.013	46.391	39.531	49.938	70.936	107.842	131.933	168.397	235.485
Mortgage Back Securities	3.870	2.466	4.320	7.119	7.042	5.249	5.250	4.704	2.812	4.093	4.435	3.452	1.536	1.104	447
Savings	53.126	65.434	69.294	86.926	88.874	61.924	57.170	51.173	39.531	49.528	59.642	72.112	87.935	132.879	115.761
Promissory Notes	61	-	449	1.025	2.049	1.449	1.384	500	518	184	767	415	605	1.383	7.894
Debentures	11.863	14.190	16.003	19.025	17.170	13.961	14.928	16.364	13.064	14.798	16.622	36.329	72.748	118.606	106.255
Stocks	223.404	152.185	216.927	255.409	160.833	228.638	225.620	185.507	124.070	234.284	341.024	482.282	722.885	1.399.353	588.679
Total	**481.658**	**445.758**	**609.705**	**743.977**	**688.139**	**649.421**	**660.829**	**620.104**	**431.176**	**644.355**	**847.228**	**1.183.305**	**1.611.505**	**2.646.918**	**1.696.411**
GDP	412.771	725.595	811.974	841.228	810.189	595.571	603.439	561.362	418.350	588.543	731.647	917.964	1.091.585	1.445.254	1.219.060
%GDP	117%	61%	75%	88%	85%	109%	110%	110%	103%	109%	116%	129%	148%	183%	139%
Reserves	38.806	51.840	60.110	52.173	44.556	36.342	33.011	35.866	37.823	49.296	52.935	53.799	85.839	180.334	193.783
FX R$/USD1	0,846	0,973	1,039	1,116	1,209	1,788	1,955	2,320	3,533	2,888	2,654	2,340	2,137	1,771	2,336

Table 6. Market value of the main types of securities traded in Brazil from 1994 – 2008, balance in USD billion, as of December. On the first line, federal government bonds held by the general public; second line, the monetary aggregate M1; third line, bonds issued by state and municipal governments; fourth line, special bonds created in 1990 to be used in the privatization program; fifth line, time deposits issued by commercial banks (CDB); sixth line, mortgage backed securities; seventh line, savings deposits; eighth line, promissory notes issued by corporations; ninth line, debentures also issued by corporations: and, on the tenth line, the total value of equities listed on the São Paulo Stock Exchange. For comparison purposes, we also show on the last five lines the total value of all securities, the Gross Domestic Product, %Total Securities/GDP, international reserves, and the R$/U$D1 exchange rate. Sources: BCB bulletin and CETIP.

Security	Percentage of the total 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Federal Government Bonds	15,2%	25,0%	27,8%	30,8%	38,9%	35,7%	39,5%	43,4%	40,9%	39,3%	36,0%	35,4%	31,8%	26,2%	**32,2%**
M1	5,6%	6,6%	4,7%	5,7%	6,1%	5,4%	5,8%	5,8%	7,1%	5,9%	5,7%	5,2%	5,1%	5,0%	5,7%
State and Muni. Bonds	1,7%	2,0%	2,4%	1,5%	1,5%	1,0%	0,1%	0,2%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Privatization Currency	1,5%	1,9%	2,1%	1,9%	2,6%	1,8%	1,6%	1,5%	1,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Time Deposits (CDB)	15,4%	12,0%	12,7%	10,4%	10,7%	8,2%	7,0%	7,5%	9,2%	7,8%	8,4%	9,1%	8,2%	6,4%	**13,9%**
Mortgage Back Securities	0,8%	0,6%	0,7%	1,0%	1,0%	0,8%	0,8%	0,8%	0,7%	0,6%	0,5%	0,3%	0,1%	0,0%	0,0%
Savings	11,0%	14,7%	11,4%	11,7%	12,9%	9,5%	8,7%	8,3%	9,2%	7,7%	7,0%	6,1%	5,5%	5,0%	6,8%
Promissory Notes	0,0%	0,0%	0,1%	0,1%	0,3%	0,2%	0,2%	0,1%	0,1%	0,0%	0,1%	0,0%	0,0%	0,1%	0,5%
Debentures	2,5%	3,2%	2,6%	2,6%	2,5%	2,1%	2,3%	2,6%	3,0%	2,3%	2,0%	3,1%	4,5%	4,5%	6,3%
Stocks	46,4%	34,1%	35,6%	34,3%	23,4%	35,2%	34,1%	29,9%	28,8%	36,4%	40,3%	40,8%	44,9%	52,9%	34,7%

Table 7. Security Category in Table 6 as a percentage of total security value by year.

LFT increases, and the value of fixed rate bonds probably decreases. These are the main bonds issued by the government. Private bond issuers usually follow the government with regards to the bond payment mechanism.

To define Brazilian asset classes, we list the main types of securities traded in the last 14 years. Most of the financial investments made in Brazil should have one of these securities as a counterpart such that investigating their common characteristics is the same as performing a "top down" analysis to determine the main asset classes. Table 6 shows the total value by asset category in securities available to the general public in Brazil as well as relevant comparators and Table 7 shows the same categories as a percentage of the total market valuation. As of December 2008, federal government bonds were a substantial proportion of total fixed income instruments and at 49.3%, were larger than time deposits (21.3%), savings (10.5%) or debentures (9.6%). The growth of government bonds and stocks, also notable, were 15.5% and 7.2% respectively over the last 14 years. Debentures, although a small proportion of the total in comparison, grew quickly over the same time period, 17% since 1994. This class represented 4.6% of the total fixed income in 1994 and in 2008 reached 9.6%. In contrast, savings decreased from 20.6% to 10.5% during this same time interval. Privatization currencies had little overall importance at the beginning of this period, but virtually disappeared by 2008, the reason being their use during the privatization process or their expiration. The balance of total assets in relation to the GDP also grew from 61% in 1995 to 139% in 2008.[7]

In fixed income securities, an important distinguishing characteristic of the government bonds is their different indexation. In Table 8 we show the participation of each index in the total balance of federal government bonds.

Percentage of the total																
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
USD	17%	8%	5%	9%	15%	21%	24%	22%	28%	33%	20%	9%	1%	-1%	-2%	3%
TR	10%	23%	9%	8%	8%	5%	3%	5%	4%	2%	2%	3%	2%	2%	2%	1%
Inflation	42%	13%	5%	2%	0%	0%	2%	6%	7%	11%	13%	14%	15%	21%	23%	24%
Selic	4%	16%	38%	19%	35%	69%	61%	52%	52%	41%	47%	50%	52%	38%	32%	27%
Fixed rate	26%	40%	43%	61%	41%	4%	9%	15%	9%	4%	12%	19%	27%	34%	33%	26%
Oma	nd	nd	nd	nd	nd	nd	nd	0%	0%	10%	7%	6%	2%	5%	12%	19%
TJLP	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 8. Distribution of the value of government bonds according to their indexation, as a percentage of the total value held by the public. In the second column there is the percentage of bonds indexed by foreign exchange (USD); in the third, indexed by the *Taxa Referential* - TR; in the fourth, indexed by inflation (it can be based on the IGPM or the IPCA inflation index); in the fifth, indexed by the selic rate which are the bonds called LFTs; in the sixth, the fixed rate; in the seventh, the balance of repo operations guaranteed by government bonds (Open Market Agreement- OMA); and, in the last column, indexed by another index called TJLP. Source: BCB Bulletin.

The indices have very distinct returns and provide an easy means to identify different asset classes. From Table 8 we see that, in December 2008, 46.4% of bonds were held in selic- and OMA-indexed bonds (included with selic-indexed bonds because their guarantees are government bonds and the return is the daily rate), fixed rate bond holdings reached 26%, inflation-indexed bonds reached 23.7%, and USD-indexed bonds reached 2.6%.

Another characteristic that can differentiate returns is duration. The longer the duration, the greater the impact of any interest rate variation on the return. It therefore can be used to create another asset class. In Table 9, we show the government debt average tenor classified by index. There is an increase in the average tenor for fixed rate bonds and an increase for inflation-indexed bonds as well. USD- and selic-indexed bonds had decreases in their tenor.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
USD	10.6	19.9	18.1	12.7	11.7	12.0	16.8	6.3	-
Inflation	37.8	72.3	68.1	68.8	79.6	68.3	64.4	71.0	69.2
Selic	27.7	36.8	21.8	22.7	17.3	19.1	9.2	9.2	7.0
Fixed Rate	5.1	3.5	3.0	6.3	5.2	9.5	22.5	26.2	30.2

Table 9. Average maturity in months of outstanding bonds by index, annually as of December. Source: Brazilian Treasury.

[7] The GDP number for 1994 is very small due to the effect of high inflation in the first semester.

The criterion (iii), credit risk, can identify a new class, for example, separating federal government bonds from other bonds. The differing credit quality among private bonds (promissory notes, debentures and some CDBs) also allows new asset classes. On a more aggregate view, differences in credit quality should not be as important as the indices because the majority of bonds are issued by the federal government and will have the same credit quality. Although theoretically credit quality is a very important characteristic that can differentiate returns, it is less important in Brazil because there are few private bonds. The liquidity criterion, (iv) above, permits the division of fixed income and equities into new groups. For federal government bonds, it is very common to segregate them into two categories, "on-the-run" (those more recently issued and probably more liquid) as opposed to "off-the-run." In equities, a similar criterion can be used and in fact it has been used to construct several market indices. Criterion (v), volume held by the public and stock market capitalization, also allows a new distinction in the fixed income asset classes. Based on this list of criteria, we propose in Figure 3 a classification of asset classes in Brazil.

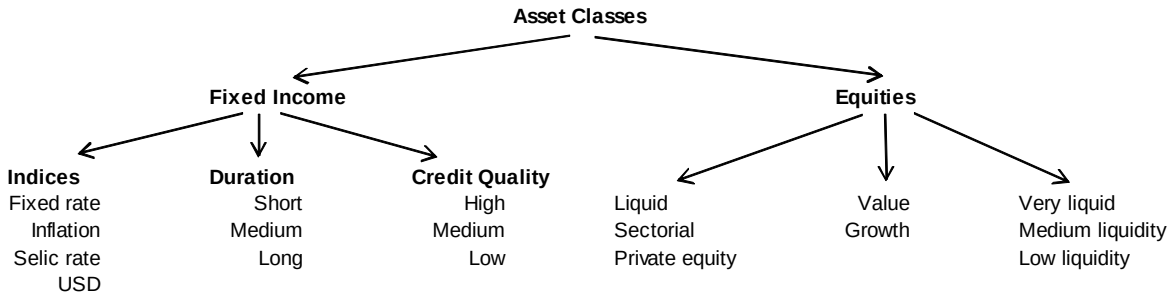

Figure 3. A proposed map of the asset classes in Brazil.

Once all of these criteria have been met, we can identify a complete set of asset classes for the Brazilian financial market that meet conditions (1) and (2). In order to verify condition (3), it will be necessary to determine a series of returns for each asset class. The returns should be calculated based on indices that replicate each class value.

3.2 Market indices

From a practical point of view, we need an index that replicates the value of each asset class. Contrary to the USA where there are thousands of market indices,[8] Brazil has only a few.

Besides replicating an asset class, it is important that the indices be investible, so that the asset class can be replicated with a tradable portfolio which thereby would allow the creation of passive portfolios for each asset class.

Few equity indices are available for the Brazilian market, the most important of which are listed below. Based on their description, it is possible to associate an asset class with each of them.

- The São Paulo Stock Exchange Index, IBOVESPA**,** the oldest and the main stock market index in Brazil, dates back to 1968 and has not had any methodological changes. The index composition is based on the trading volume and the number of transactions of the stocks listed at Bovespa.
- The Brasil Index, **IBX,** is a stock market index that measures the return of a portfolio containing 100 stocks, selected from the most actively traded at BOVESPA. The selection of stocks is based on the trading volume and the portfolio weights are based on the outstanding number of stocks held by the public.
- The **IBX-50** is very similar to the IBX above, but with only 50 stocks in its portfolio. The smaller size allows easier portfolio replication by market participants.
- The **IGC** is an index with stocks that have better corporate governance according to Bovespa.
- The **IEE** is an index that tracks stocks linked to electric companies. For each company, the portfolio has only one type of stock, all of which are equally weighted.

[8] They range from broad indices like the Wilshire 5000 that encompasses a huge number of the stocks traded in USA, or the IFCG Composite Index, which encompasses a large set of emerging countries, to very specific sectorial indices such as the Goldman Sachs Technology Index-GSTI Internet, which tracks only internet technology stocks. Nowadays most of the existing assets (financial or not) are tracked by some type of index. For additional information, see Neubert (1997).

- The **FGV-100** is an index based on 100 non-financial and non-government companies. Its portfolio selection is based on the market value and number of days per year during which the stock is traded. The portfolio weight is based on the company market value.

For the fixed income asset class, there also are few indices, all with short histories. Unfortunately, data on returns before 1990 are impossible to get, due to high inflation rates of that period and the several "economic plans," especially the Collor I Plan of 1990. It froze all fixed income assets at that time, making it impossible to evaluate their returns or to construct any historical series of returns.

To construct a fixed income index, it is necessary to know the value of all interest paid and the index to which the bond eventually is linked in addition to market prices for each bond. The main difficulty in deriving these indices is the low bond liquidity, which makes the periodic collection of market prices difficult. To avoid these problems, Varga (1999) showed an alternative method for developing a fixed income index, one which consists of using the fixed duration index based on SWAPs rates traded at the BM&F. In 1999, Quantum[9] launched two indices based on this technique, Quantum Cambial and QuantumPrefixado, both with series retroactive to January 1997.

In February 2000, Andima[10] and the BM&F launched a fixed income index based on fixed rate government bonds. This index, called *Índice de Renda Fixa de Mercado* – IRFM, has a portfolio that is weighted by the bond market value and is updated on a daily basis according to the prices collected by Andima. In April 2005, Andima launched several new fixed income indices to cover the other indexed bonds. Each had retroactive data starting from December 2002 and was developed using a similar methodology. These indices are called *Índice de Mercado Andima* – IMA and are based on federal government bonds indexed to inflation (called IMA-C and IMA-B), to the selic rate (IMA-S) and a general one called simply IMA.

It is worth mentioning that the indexed bonds traded in Brazil pay the index variation plus interest on top of the index. Therefore, a portfolio that contains indexed bonds is subject to two components: interest paid and the index variation. The sole use of the index to evaluate these asset classes can lead to erroneous results, either in the evaluation of risks or of asset allocation because they do not include the paid interest on top of the index.

In summary, the following indices can be used to track the Brazilian fixed income market:

- **CDI** is the one day interbank rate calculated by CETIP. The capitalization of this rate provides an index for short term investment close to the one day repo market. This series goes back to 1990.
- **QuantumPrefixado** is a fixed duration index produced by Quantum. It replicates the value of a fixed rate portfolio with exact six-month duration and goes back to December 1996.
- **QuantumCambial** is also a fixed duration index that replicates USD-indexed investments traded in Brazil. It is produced and published every day by Quantum with a series starting in 1997.
- **IRFM** is an index that replicates the value of a portfolio of government bonds with fixed rates. The portfolio weights are based on each bond's market volume. It is published daily with a series starting in February 2000.
- **IMA** indices are also published daily by Andima. There are four different indices—IMA-C and IMA-B that track inflation indexed bonds, IMA-S that tracks selic-indexed bonds (LFT) and a general one that is a combination of all IMA indices plus IRFM, weighted as well by their market volumes.

Besides the indices that replicate the return on fixed-income bonds traded in the market, the government created special interest rates, called the *Taxa Referencial* (TR) and the *Taxa de Juros de Longo Prazo* (TJLP) for certain financial operations in Brazil. Although they are used as indices for certain bonds, there is a very small market for this type of bond. The government also uses the TR to adjust savings accounts and the TJLP to adjust loans given by the BNDES.

To understand the Brazilian financial sector, for simplicity, we will use only six asset classes: equities, one day fixed income (CDI), fixed rate, inflation-indexed, USD-indexed, and selic-indexed, represented respectively by the indices Ibovespa, CDI, IRFM, IMAC, QuantumCambial and IMAS. In order to compare them, we have to start in 2002 because data are incomplete before that year. In Table 10, we show the annualized rates of return, in descending order, for these six indices.

[9] Quantum is a private provider of mutual fund data in Brazil. For additional information, see www.quantumfundos.com.br.
[10] Andima is an open market dealers and banking association.

2002	2003	2004	2005	2006	2007	2008
Q_Cambial	Ibovespa	IMAC	Ibovespa	Ibovespa	Ibovespa	Q_Cambial
0,39%	141,05%	34,83%	44,09%	46,41%	73,44%	1,52%
IMAC	IMAC	Ibovespa	IMAS	IMAC	IMAC	IMAC
-10,41%	63,41%	28,16%	35,76%	31,25%	50,74%	-13,11%
IRFM	IRFM	IMAS	IRFM	IRFM	IMAS	IRFM
-21,17%	56,89%	26,51%	35,57%	29,52%	35,09%	-13,69%
CDI	IMAS	CDI	CDI	IMAS	CDI	IMAS
-21,79%	55,76%	26,45%	34,95%	26,17%	34,97%	-14,82%
IMAS	CDI	IRFM	IMAC	CDI	IRFM	CDI
-23,78%	50,73%	25,65%	21,79%	25,94%	33,67%	-14,83%
Ibovespa	Q_Cambial	Q_Cambial	Q_Cambial	Q_Cambial	Q_Cambial	Ibovespa
-46,02%	25,07%	2,16%	1,80%	3,83%	8,40%	-55,47%

Table 10. Annual return in USD of the main asset classes in Brazil. Source: Quantum.

In Table 11, we show the correlations and the volatility of the indices, based on monthly returns.

	CDI	Ibovespa	IMAC	IMAS	IRFM	Vol_%aa
CDI						20%
Ibovespa	87%					42%
IMAC	96%	86%				21%
IMAS	**100%**	87%	96%			20%
IRFM	**99%**	88%	96%	**99%**		21%
Q_Cambial	66%	**56%**	66%	66%	65%	13%

Table 11. Asset classes correlation and annual volatility from January 2002 to December 2008, based on USD returns.. Source: Quantum.

In Table 10, we verify that the returns are different over time, which is confirmed in Table 11 by the return correlation. It is worth noting the high correlation between most of the bonds. Only the USD-indexed bonds have a smaller correlation. This indicates a low diversification power offered by these asset classes to a foreign investor. The returns, correlations, and volatility of these indices suggest that they comply with the asset class definition of Sharpe within Brazil.

With a well-defined set of asset classes as well as valid indices to generate quantitative measures, the style and performance of money managers in Brazil can be easily evaluated. The asset classes provide a "simplified map" of money managers' investment alternatives. In practice they become a benchmark for evaluating the risks and performance of funds.

4 Fund managers

The growth of the mutual fund industry and its increasing sophistication contributes to a growing number of money managers. These money managers offer funds that are usually classified according to their asset classes, type of investor, and taxation or the regulations imposed by the authorities. In addition to the official classification from CVM, private organizations, including Quantum, have developed additional classifications.[11] Table 12 lists two of these mutual fund classifications. Obviously no classification is complete, but in general these two are very close.

[11] ANBID, the investment banking association, has another classification with 47 different types of funds.

CVM	Quantum
Fixed Income - Short Term	Equities - Active
Referenciado	Equities - Index
Fixed Income	Equities - Private Equity
Equities	Equities - Sectorial
FX Linked	FX
Foreign Debt	Capital Protection
Multimercado	Credit Rights
Participation	Invest Abroad (FIEX)
Credit Rights	Hibrid
Privatization	Retirement
Market Index	Fixed Income - DI
	Fixed Income - General
	Fixed Income - Indexed

Table 12. Two classifications of mutual funds in Brazil.

We show, in Table 13, the total AUM of each type of fund according to the official CVM classification. These totals include funds of funds (FICs) that had USD244 billion as of December 2008 or 33% of the total. The five largest types of funds are: fixed income (42.7%), multimercado (25.2%), referenciado (17.6%), equities (7.1%) and fixed income-short term (4.1%). In December 2008, they represented 97% of the total AUM.

CVM Classification	1997	1999	2002	2005	2008
Equities	12.3	8.9	8.4	23.6	52.0
FX Linked	1.1	1.5	1.0	1.2	0.6
Fixed Income - Short Term	10.2	6.5	6.7	16.2	30.1
Credit Rights	-	-	-	4.9	15.8
Foreign Debt	0.2	0.2	0.1	0.9	0.4
Market Index	-	-	-	-	0.0
Multimercado	35.9	25.4	31.3	106.0	185.9
Participation	0.8	0.4	0.3	0.6	3.7
Privatization	-	-	1.2	3.7	3.7
Referenciado	21.3	64.1	44.8	114.7	129.9
Fixed Income	77.3	79.5	54.0	223.7	314.8
Total	**159.1**	**186.6**	**147.8**	**495.5**	**736.9**
% of total					
Equities	7.7%	4.8%	5.7%	4.8%	7.1%
FX Linked	0.7%	0.8%	0.7%	0.2%	0.1%
Fixed Income - Short Term	6.4%	3.5%	4.5%	3.3%	4.1%
Credit Rights	0.0%	0.0%	0.0%	1.0%	2.1%
Foreign Debt	0.1%	0.1%	0.1%	0.2%	0.1%
Market Index	0.0%	0.0%	0.0%	0.0%	0.0%
Multimercado	22.6%	13.6%	21.2%	21.4%	25.2%
Participation	0.5%	0.2%	0.2%	0.1%	0.5%
Privatization	0.0%	0.0%	0.8%	0.7%	0.5%
Referenciado	13.4%	34.4%	30.3%	23.1%	17.6%
Fixed Income	48.6%	42.6%	36.5%	45.1%	42.7%

Table 13. Total AUM by CVM classification of type of fund, balance in USD billion, as of December. Source: Quantum.

To better understand the mutual fund industry, we investigated in more detail the five largest types of funds by AUM. In the official CVM classification:

- Fixed Income funds have at least 80% of the portfolio invested in fixed-income bonds;

- Multimercado funds have an investment policy that pursues diversification in several asset classes;
- Referenciado funds have a minimum of 95% of the assets in the portfolio linked to the reference index announced by the fund;
- Equities funds have at least 65% of the portfolio invested in equities; and,
- Fixed Income – Short Term funds are fixed-income funds where all their bonds have a maturity of less than 375 days and are held less than 60 days.

There is no official classification for management companies, so we decided to segregate them based on the type of managing company: commercial bank (CB); investment bank (IB); independent manager (IM); pension fund (PF); insurance company (I); and, broker (B), in addition to identifying regular funds (FI), and funds of funds (FICs). In Table 14, we show the AUM by fund type and type of manager for the FIs.

	Dec-2008	CB	IB	PF	IM	I	B
Equities	**10.0%**	60.8%	4.2%	1.8%	**29.8%**	0.3%	**3.2%**
FI - Short Term	**3.4%**	**95.0%**	2.4%	0.0%	2.6%	0.0%	0.0%
Multimercado	**22.7%**	49.9%	**24.4%**	**6.7%**	**17.7%**	0.5%	0.8%
Referenciado	**16.9%**	86.2%	6.7%	0.1%	6.8%	0.2%	0.0%
Fixed Income	**47.0%**	88.0%	4.9%	2.6%	2.5%	**1.8%**	0.3%
% Total		76.5%	9.5%	2.9%	9.4%	1.0%	0.6%

Table 14. Regular Funds' (FIs') AUM distribution by fund and manager type, as of December 2008. The second column lists the AUM for each type of fund as a percentage of total AUM. Bold font indicates the largest type of fund for type of manager. Source: Quantum.

Commercial banks (CBs), with 76.5% of the total AUM, are the major money management companies in Brazil for all types of funds. In the case of FI-Short Term funds, CBs manage 95% of the assets, but for equities and multimercado funds, CBs manage 60.8% and 49.9%, respectively. The main activity for investment banks (IBs) is in multimercado funds, while for Pension Funds (PFs) it is in multimercado funds and for Insurance Companies (ICs) it is in fixed income funds. PFs and ICs do manage funds but they are also important investors in other funds which they do not manage. As expected, brokers are active mainly in equity funds, and finally, independent managers (IMs) participate mainly in equity and multimercado funds. The 356 registered money management companies, 40 of which are foreign companies, control approximately 21% of the total AUM.

In Table 15, we present a similar analysis for FICs. Regarding the fund types, FICs have less activity in multimercado funds and more activity in equity and referenciado funds than FIs. Regarding manager type, note that compared to FIs, FICs hold a smaller percentage of independent manager funds (IMs) in equity funds, a smaller percentage of investment bank funds (IB) in multimercado funds, and a larger percentage of pension fund (PFs) in multimercado and referenciado funds.

FICs	Dec-2008	CB	IB	PF	IM	I	B
Equities	**20.8%**	90.8%	0.8%	0.0%	**8.3%**	0.0%	**0.1%**
FI - Short Term	**5.8%**	**100.0%**	0.0%	0.0%	0.0%	0.0%	0.0%
Multimercado	**2.1%**	61.3%	**0.8%**	**11.8%**	**25.9%**	0.0%	0.3%
Referenciado	**32.5%**	53.1%	18.7%	11.0%	14.6%	1.2%	1.3%
Fixed Income	**38.7%**	91.1%	1.3%	4.2%	0.8%	**2.5%**	0.0%
% Total		78.6%	6.8%	5.5%	7.4%	1.4%	0.5%

Table 15. The AUM distribution for FICs by fund type and manager type, as of December 2008. Bold font indicates the largest type of fund for type of manager. Source: Quantum.

Another important distinction among funds is the type of investor from which they can receive money, which can be: exclusive (where monies come from only one investor or from a restricted portion of the public); qualified investor; institutional investor; or investor in general. Exclusive funds have external managers which decide on the portfolio allocation in general and they are only a vehicle with the objective of lowering transactions costs. Funds aimed at institutional investors usually have a conservative and very constrained investment policy, also resulting in a low cost. Funds aimed at qualified investors usually have more sophisticated strategies and charge higher fees.

	FI		FIC		Total	
Exclusive	150	32%	36	15%	186	26%
Institutional Investor	126	27%	92	38%	218	31%
Qualified Investor	8	2%	3	1%	12	2%
Investors in General	184	39%	113	46%	297	42%
Total	**468**		**244**		**712**	

Table 16. AUM funds distribution by amount, percentage of total, and type of investor, for regular funds (FIs) and funds of funds (FICs), as of December 2008. The second column lists the number of FIs, the fourth column, the number of FICs and the sixth column, the total number of funds. Source: Quantum.

As seen in Table 16, 26% of AUM is managed by exclusive funds, with a greater concentration in regular funds (FIs); institutional investor funds manage a large share of the total AUM, 31%, and although there are fewer of them managing funds of funds (FICs) than regular funds (FIs), the assets they manage are more concentrated in FICs. Qualified investor funds have a small share, only 2% of the total and most of the funds (42%) are aimed at investors in general. Some types of funds (FIDC, FMP and others) were excluded from this table due to their small sizes which collectively comprise 3.4% of the total. Approximately half the amount or 72% of AUM of FICs are under the management of pure "feeders" for another FI. The majority of the rest of FICs also invest in other funds from the same manager.

The US mutual fund industry has large companies specializing in fund management and distribution, for example, Fidelity, Vanguard, or American Funds. In Brazil most of the funds, in terms of AUM, are managed by commercial banks. Recently, with the increases in sophistication and internationalization of the local financial market as well as the 1997 creation of the "Chinese Wall," independent managers (IMs) have gained importance. Since then, the large banks have avoided managing high risk funds directly, due to the possible negative impact on their image and reputation and more importantly, the repercussions that a possible loss in a small high risk fund can have on the dozens of other funds they manage. In order to participate in the higher risk business, banks have created and distributed funds of funds (FICs) that have invested in high risk funds managed by IMs, thereby reducing their total risk by diversification through the use of many IMs. According to Figueiredo and Tigre (2006), this situation has created a large market for IMs with the sole purpose of money management. These companies are small and are considered investment "boutiques," comparable to international hedge funds but not to the large money management companies in the US. In Table 17, we show the evolution of each type of manager's market share.

	1997	1999	2002	2005	2008
CB	82%	81%	79%	79%	77%
IB	7%	8%	9%	9%	9%
PF	0%	0%	1%	3%	3%
IM	11%	10%	9%	7%	9%
I	0%	0%	1%	1%	1%
B	0%	1%	2%	0%	1%

Table 17. Annual market share of each type of mutual fund manager as a percentage of total AUM. Source: Quantum.

Based on total AUM, the numbers in Table 17 indicate that CB's have lost a small market share to other types of companies, as have IMs. However, we see a very different situation when we track the number of IMs, as shown in Table 18. For simplicity, we include in this table only the three largest types of managers: CBs, IBs, and IMs.

	1997			1999			2002			2005			2008
	Total	New	Closed	Total	New	Closed	Total	New	Closed	Total	New	Closed	Total
CB	33	3	0	37	5	3	39	5	6	38	2	2	38
IB	28	11	0	39	8	7	40	11	8	43	8	7	44
IM	28	13	0	41	34	3	72	81	6	147	97	15	229
	89	27	0	117	47	13	151	97	20	228	107	24	311

Table 18. Change in the number of money managers from 1997 to 2008. Source: Quantum.

The growth in the number of IMs is quite impressive, increasing from 28 in 1997, to 229 in 2008.

Table 19, which shows the changes in AUM market share for CBs, IBs, and IMs by fund type, suggests the preferred type of fund for each manager type.

	CB				IB				IM			
	1999	2002	2005	2008	1999	2002	2005	2008	1999	2002	2005	2008
Equities	62%	65%	62%	61%	17%	10%	7%	**4%**	20%	24%	29%	**30%**
FI - Short Term	96%	86%	94%	95%	3%	7%	2%	2%	1%	7%	4%	3%
Multimercado	66%	66%	**49%**	50%	18%	21%	30%	24%	13%	**9%**	11%	**18%**
Referenciado	79%	85%	89%	86%	4%	4%	4%	7%	16%	11%	7%	**7%**
Fixed Income	92%	84%	88%	88%	4%	6%	5%	5%	3%	4%	3%	2%

Table 19. Changes in AUM market share for each manager type by type of fund. Source: Quantum.

These numbers show a decreased participation by CBs in the management of multimercado funds for this period with a compensatory increase in IM participation, and lower IB participation in the management of equity funds with an overall compensatory increase in the participation of IMs. IM fund participation in referenciados declined, while CBs and IBs increased their shares of total AUM.

To measure the concentration degree we show, in Table 20, the market share of the five largest managers, by type of fund, on the total AUM of each type.

	% of AUM
Equities	65%
FI- Short Term	95%
Multimercado	47%
Referenciado	72%
Fixed Income	67%

Table 20. Degree of concentration of the Brazilian mutual fund industry, as of December 2008. Percentage of AUM managed by the five largest funds in each fund type. Source: Quantum.

As would be expected, the degree of concentration is higher in funds in which CB participation is greater. Since the banking industry in Brazil is very concentrated, one would expect the same for the mutual fund industry. In multimercado funds, where the participation of IMs is relatively greater, the degree of concentration is smaller, since the five largest managers have 47% of the AUM. According to Ramos (2009), the average concentration ratio elsewhere in the world (based on the five largest management companies) is approximately 65% in Europe, 50% in Asia and 34% in the USA. Thus, Brazil ranks as having one of the most concentrated mutual fund industries in the world.

In exchange for the services offered by fund managers, several types of fees can be charged: front load; end load; administration; and, performance. End load and front load fees are unusual in Brazil although they are allowed. The administration fee is used widely and is calculated as a percentage of the AUM. The performance fee is computed as a percentage of the profit generated, works like a call option, and although it is found more frequently in more sophisticated funds, there are legal restrictions on how it can be charged. In addition, investors must pay for the funds' expenses such as mail and commissions, etc. A very controversial charge is the broker's fees which eventually return to the fund management company, called rebate. In Table 21, we show the average administrative fees charged for each fund category, the standard deviation of the fees in each category, and the percentage of the funds in each category that charge performance fees.

Among FIs, the highest average administrative fee occurs in equity funds, followed by fixed income-short term funds, but when the fees are weighted by AUM, multimercado funds have the highest average fee. For FICs, the two highest average administrative fees occur in fixed income-short term funds and equity funds. These rankings are unchanged by AUM weighting. FIC funds have a wider range of AUM-weighted average fees than do FI funds.

The high administrative fees charged in equity and multimercado funds can be well justified because these types of funds demand highly qualified researchers and managers. Fixed income-short term funds do not require such sophisticated and expensive resources, but the fees are still very high, probably because these are retail products offered by commercial banks which have high operating costs.

For comparison purposes, the approximate total of administrative fees collected in 2008 was USD3.9 billion: USD3.2 billion for CBs; USD0.42 billion for IMs; and, USD0.21 billion for IBs. In the USA in 2006, according to ICI, administrative fees averaged 1.51% of AUM for equity funds, 1.41% for hybrid funds (this type of fund is similar to the Brazilian multimercado fund), 1.1% for fixed income funds and 0.61% for money market funds (similar to Brazil's fixed income-short term funds). The AUM-weighted average fees were 0.87% for equity funds, 0.80% for hybrids, 0.68% for fixed income, and 0.41% for money market funds.

In general, fees in the USA are lower than in Brazil, but what is surprising is the great difference between the fees on Brazilian fixed income-short term funds and the US money market funds. In Brazil they are one of the most expensive types of funds while in the USA they are the cheapest type of fund.

Fund type	Number of funds	Arithmetic average	DP	Weighted average by AUM	% of funds that charge Perf. Fee
FI					
Equity	406	2,37	1,34	0,83	40,6%
FI- Short Term	19	2,10	1,34	0,79	0,0%
Multimercado	455	1,51	0,69	1,25	75,2%
Referenciado	80	0,50	0,34	0,26	2,5%
Fixed Income	151	0,80	0,83	0,55	11,3%
FIC					
Equity	185	2,13	1,24	2,27	28,6%
FI- Short Term	55	2,77	2,02	2,94	0,0%
Multimercado	468	1,03	0,78	1,02	42,1%
Referenciado	223	1,34	1,23	1,34	0,0%
Fixed Income	196	1,38	1,08	1,07	4,6%

Table 21. Administrative fees charged by type of fund (per cent per annum), as of 2008. The second column lists the number of funds, the third lists a simple arithmetic mean of the fees, the fourth lists standard deviation, in the fifth, the fees are weighted by AUM and the last column shows the percentage of funds that charge performance fees. Information on exclusive funds is not included in this table. Source: Quantum.

A performance fee is charged by the majority of FI-multimercado funds (75.2%) and by a high proportion of FI-equity funds (40.6%). However, we find that this fee occurs in the majority of funds managed by IMs: 88.7% of all multimercado funds (both FI and FIC) and 74.8% of both types of equity funds. The numbers show that independent manager funds (IMs) are a different type of company, either for their location (type of asset class traded) in terms of fund type, or the way they charge their fees.

Because many IMs are well known for their sophisticated trading strategies and *modus operandi* that resemble international hedge funds, locally they are called hedge funds. Legally they are all treated as mutual funds[12] and according to the data in Table 14, their activities are mainly in multimercado and equity funds. Using the Fung and Hsieh (1999) definition of hedge funds, which identifies them as small organizations, one should not confuse multimercado funds with Brazilian hedge funds because the majority of multimercado funds are managed by large CBs, although most (58%) of the so-called Brazilian hedge funds (IMs) do use multimercado funds. These managers use strategies with or without leveraging and trade in several different markets. Their announced strategies are similar to international hedge funds, but they do not always disclose their strategies, preferring in many cases to keep everything secret. The most common strategies are:

- **Equity market neutral strategies**, which attempt to minimize market risk by making very specific investments in a sector, market capitalization, country, region, statistical factor, etc. They do use derivatives and leveraging.
- **Equity long/short strategies**, literally a hedge fund because it buys the stocks that are supposed to be inexpensive and sells (hedges) those thought to be expensive. This strategy also can use futures contracts to hold long or short positions if the managers do not find any cheap or expensive stocks. It has low market risk due to the short and long positions.
- **Short sales strategies**, which look for shorting opportunities.

[12] Brazilian legislation does not distinguish between hedge funds and mutual funds, all funds having the same legal framework. However, the regulations are less restrictive than in the USA with regards to leveraging and performance fees charged.

- **Opportunistic strategies,** which endeavor to create portfolios concentrated in markets with specific characteristics, e.g., book value, market capitalization, sales, momentum, January effects, etc.
- **Events strategies**, which focus on stock market opportunities arising from distressed companies, mergers, stock buybacks, etc.
- **Global strategies**, which look for opportunities arising from global economic changes and invest in stocks of any company around the world. This is an international stock-picking strategy.
- **Growth strategies,** which focus on companies with attractive growth prospects in profits; a strategy that in general is associated with medium and small companies.
- **Value strategies,** which focus on companies that although well-established, have a low stock price in relation to the intrinsic value of the company. In general the stocks are chosen by fundamental analysis.
- **Convertible arbitrage strategies,** which explore the price differentials between convertible bonds and the value of the option and fixed income part of the bond.
- **Fixed income arbitrage strategies,** which bet on term structure movements without taking the interest rate risk. This strategy also can arbitrage credit risk components via credit derivatives.
- **Quantitative strategies,** which use statistical criteria to select cheap/expensive stocks to take long/short positions. This strategy usually seeks to minimize market risks.
- **Global macro strategies,** which bet on global macroeconomic movements based on prices, such as interest rates, currencies, inflation, commodities and stock market indices. These strategies use derivatives, take positions in any country, and avoid credit risks.
- **Emerging markets strategies,** which invest in equities, private bonds and government bonds from emerging economies, for instance, Brazil, Russia, India and China. In Brazil there is one specific type of fund for this strategy: the external debt fund.
- **Fund of Funds strategies,** which seek to diversify hedge fund risks by selecting several funds, conducting careful analyses and performing due diligence aimed at finding the best money managers.

In Table 22, we show the main strategies used by independent managers (IMs) as well as the numbers of managers and funds, and the AUM associated with each strategy. Since detailed strategy disclosures are not mandatory under current regulations, it is very difficult to know all the strategies used by funds, and thus it is not possible to obtain a complete picture of their sizes. What is known comes from their fund prospectuses and direct contact with the fund managers.

Strategy	Number of managers	Number of funds	AUM 2008 (USDmillions)
Fixed Income Arbitrage	5	8	412
Equity Hedge	63	63	1.445
Long Biased	5	5	299
Macro	50	76	4.020
Quantitative	9	10	362
Opportunistic	11	17	796
Total	143	179	7.336

Table 22. Numbers of IMs, funds and AUM (in USD million) by strategy. Source: Quantum.

In Table 22, the equity hedge strategy category includes funds in the equity market neutral strategy as well as funds in the equity long/short and events strategies. The long biased category includes funds in the growth and value strategies. Based on this small sample, the most common strategies are equity hedge and macro as measured by number of funds, number of managers, and AUM. With the recent possibility of investing abroad, local funds certainly will employ even more sophisticated strategies, thus increasing diversification, returns and the sizes of these funds.

An interesting characteristic of the mutual fund industry in Brazil is that very few management companies disclose information regarding the actual person who determines fund investments. CVM regulations require that an individual be responsible for the fund and that his/her name be published, but in general, money management companies disclose only one name or just a few names as the responsible parties for all their funds. For instance, in December 2008, the three the main management companies had 1402 different funds, with USD365 billion AUM, but announced only 24 managers, therefore suggesting that each manager was responsible for an average

of 58 funds and USD15 billion! Even the small management companies do not care to reveal information regarding the person responsible for portfolio allocation. They all argue that portfolio decisions are made by committees and not solely by any one individual.

In summary, the mutual fund industry in Brazil shows the strong presence of commercial banks in terms of size, but in the last decade, IM fund activity has increased in higher risk funds, such as multimercado and equity funds. Independent managers are well known for using strategies similar to international hedge funds as well as the extensive use of performance fees for compensation.

5 Investors

From a historical perspective, the Brazilian financial market has been closed relative to other countries' markets. Individuals only recently have been allowed the freedom to send money abroad. Pension funds still suffer restrictions on foreign investment and mutual funds only recently have been allowed to do so. Domestic funds target local investors, which can be classified as individuals, non-financial companies, pension funds and insurance companies. Distribution to foreign investors is quite recent, although many IMs sell offshore funds that merely mirror their local ones. Nowadays, foreign investors can invest directly in local funds.

Fund distributions can be direct or indirect. In the former case, the manager sells its funds directly to investors, whereas indirect sales occur through third parties. Several types of companies are involved in the fund distribution business, although it is concentrated in banks. There is very little cross-selling of funds and a fund "supermarket" does not exist.

Individuals are not only direct investors, but also are important indirect investors through pension funds, open retirement plans, wealth managers (WM), private banking (PB) and family offices (FO). In addition, Brazil allows the existence of the personal financial advisor, a function which is regulated by the CVM although it has little importance in terms of size. Most financial advice has been provided directly by banks.

Figure 4 shows the structure of the mutual fund industry in Brazil.

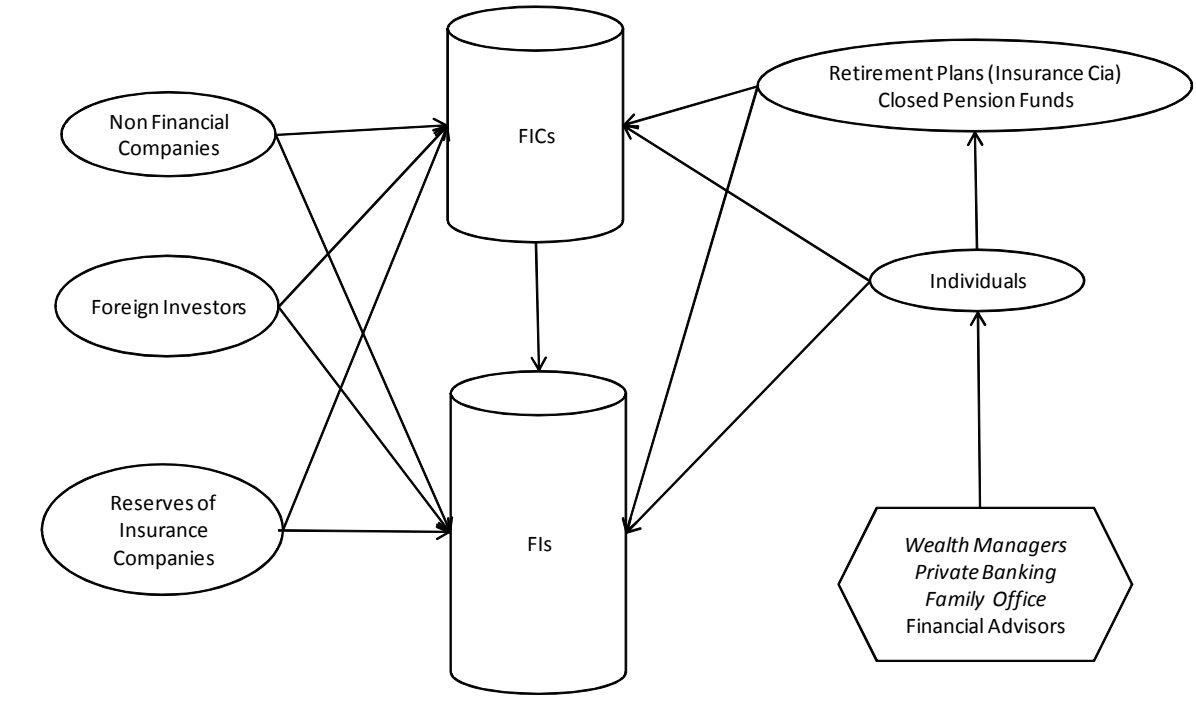

Figure 4. Investors and the distribution of mutual funds in Brazil.

According to data from December 2008, total investments of pension funds (PFs) were USD190 billion, of which 43% were invested in non-equity funds (including fixed income, multimercado, referenciado and credit

rights funds) with 15% being invested in equity funds. Insurance companies had total reserves of USD27 billion, with 64% invested in fixed-income funds. Foreign investors had financial investments of USD123 billion, of which USD4 billion was in mutual funds specially created for foreign investors. The total AUM of retail funds, defined as funds with more than 2000 individual investors, was USD106 billion. The industry total AUM, excluding FICs, was USD468 billion, distributed 24% with PFs, 4% with insurance companies, 1% with foreign investors, 23% with retail funds, and the remainder (49%) with non-financial companies and wealthy investors.

Intermediaries (wealth managers and family offices) generally are small investment boutiques that usually have their own investment funds. Sometimes they are confused with independent managers, however their main objective is not direct management but the selection of good money managers and their client's portfolio allocation. Private banking (PB) usually is established inside large financial institutions to attend exclusively to the interests of their wealthier clients. Direct money management is not the main objective of PB although decisions on client asset allocation are within their domain. Their numbers are not known.

6 Performance

The returns and risks of a mutual fund generally depend on the asset classes available to the manager. One would expect a passive management fund to have returns and risks very close to the asset class it follows and smaller fees. One expects actively managed funds to have returns and risks that are different from funds with passive management. Studying data ranging from 1997 to 2003, Varga and Wengert (2003) analyzed a sample of 1111 actively managed funds and found that the main asset classes in Brazil, represented by Ibovespa, CDI, inflation-indexed and USD-indexed indices, were responsible for more than 80% of the returns variation of 50% of the supposedly "active managed funds." They used the return-based style analysis developed by Sharpe (1992) to reach this conclusion. In the case of multimercado funds, the same set of asset classes explained only 24% of the returns variations. An asset class analysis does not explain well the performance of these more sophisticated funds, possibly due to the sophisticated strategies adopted by their managers. A study by Franco and Branco (2006) has shown that multimercado funds managed by independent managers (IMs) have produced positive alpha. Based on this result, they conclude that on average, the value added by those managers more than compensates for the high fees charged.

Table 23 shows the net cumulative returns between 2002 and 2008 for several types of funds. We also show the cumulated average return of the top 10% and lowest 10% and also the volatility of each group.

Cumulated return/annual volatility				
Type of fund	**Number of Managers**	**Top10%**	**Low10%**	**Average**
Equity	62	631%	55%	253%
		24%	26%	27%
FI-Short Term	11	185%	41%	118%
		0%	1%	1%
Multimercado	66	325%	143%	203%
		8%	5%	4%
Referenciado	31	192%	148%	174%
		0%	1%	1%
Fixed Income	51	230%	121%	177%
		2%	1%	1%

Table 23. Cumulative return by fund type between January 2002 and December 2008. The third column shows the average returns of 10% of the funds with the highest returns, in the fourth, the average returns of the funds with the 10% lowest returns, and in the last column, the average returns for all funds. All returns have been weighted by the funds' AUM. The line below the returns lists the annual volatility for the group above. Source: Quantum.

Using numbers not show in table 23, the average return of equity managers surpassed Ibovespa's return of 172% in the same period and the top 10% had a cumulative return three times larger than the Ibovespa. Even the top 10% of FI-short term funds had a cumulative return lower than the CDI (191% for the same period). The return on multimercado funds on average surpassed the CDI but not the IMAC (313% in the same period) or the IRFM (215% in the same period), although the return for the top 10% surpassed all these benchmarks. The return on referenciado funds, on average, was close to that of the CDI but below other benchmarks, while the

return of their top 10% slightly surpassed the CDI. The return for fixed-income funds was on average close to that for referenciado funds and their top 10% were above all benchmarks except the IMAC.

The top 10% of equity funds had less volatility than the group average and the top 10% of multimercado funds had almost twice the volatility of their group average. All other funds had very low volatility. It is natural for active management funds to have some volatility, otherwise they probably should be considered passive managed funds.

Besides the returns and risk of all funds, it is worth investigating the extreme situations that have occurred in the Brazilian mutual fund industry. Since 1997, few crises have originated in the local financial market, but many of those that have occurred have been the consequence of external crises. The first one, the Asian crisis initiated by the Thailand default, was followed by the Russian crisis, precipitated by the Russian government default. The third crisis originated in Brazil with the termination of the fixed exchange rate and the fourth crisis, the mark to market (MTM) crisis in 2002 also was a local crisis. More recently, the subprime crisis that had two waves, the first in 2007 and second in September 2008 with the Lehman Brothers bankruptcy, also affected Brazil's financial market. The crisis caused by the September 11 terrorist attacks had little local impact. The market also went through small crises when the BCB increased interest rates in November 2004 and May 2006. The famous bankruptcy of Banco Santos occurred without any links to macroeconomic phenomena. In Table 24 we list several crises that affected funds in Brazil. Most were caused by market risk events and some of them became the subject of CVM investigations.

Crisis	**Funds**	**Problem**	**Date**	**Risk**
Asian crisis	Linear	The funds' value went down 32% in one day.	October 1997	Market
BRL devaluation	Marka, Fonte-Cindam and Boavista	Several funds reached negative value due to currency options sold.	January 1999	Market
Cemar debentures Bankruptcy	DI fund from Dresdner	A conservative fixed-income fund lost 5.63% due to the default in debentures.	March 2002	Credit
Mark to Market crisis	Bank of America	A fund lost 24% in June 2002, due to higher interest rates.	June 2002	Market
Banco Santos bankruptcy	Banco Santos	The losses in some funds reached 100% due credit risk that extrapolated the fund limit.	November 2004	Credit and operational
BCB increase in interest rates	SanMarino fund from Global Invest	The fund lost 38% in May 2006 due to higher interest rates.	May 2006	Market

Table 24. Crises that have occurred in the Brazilian mutual fund industry.

In the past 12 years, the mutual fund industry has suffered relatively few large crises and even those that occurred were small in comparison to the size of the whole industry. However, the periods of crisis have been characterized by larger withdrawals from the higher risk funds, especially the independent manager funds (IMs).

Figure 5 shows the changes in local interest rates and the Ibovespa, as well as the relationship between the total mutual fund AUM and the sum of monetary aggregate (M4) plus the total stock market capitalization (MktCap), for the period December 1996 to December 2008. We also identify the crises which occurred during this period. The graph shows high interest rate volatility until 1999, followed by a period of fixed exchange rates and diminished volatility. In both periods, interest rates fell, the Ibovespa increased, and mutual funds' AUM as a percentage of (M4+MktCap) also increased, suggesting that lower interest rates and high stock prices have contributed to the relative growth of the mutual fund industry.

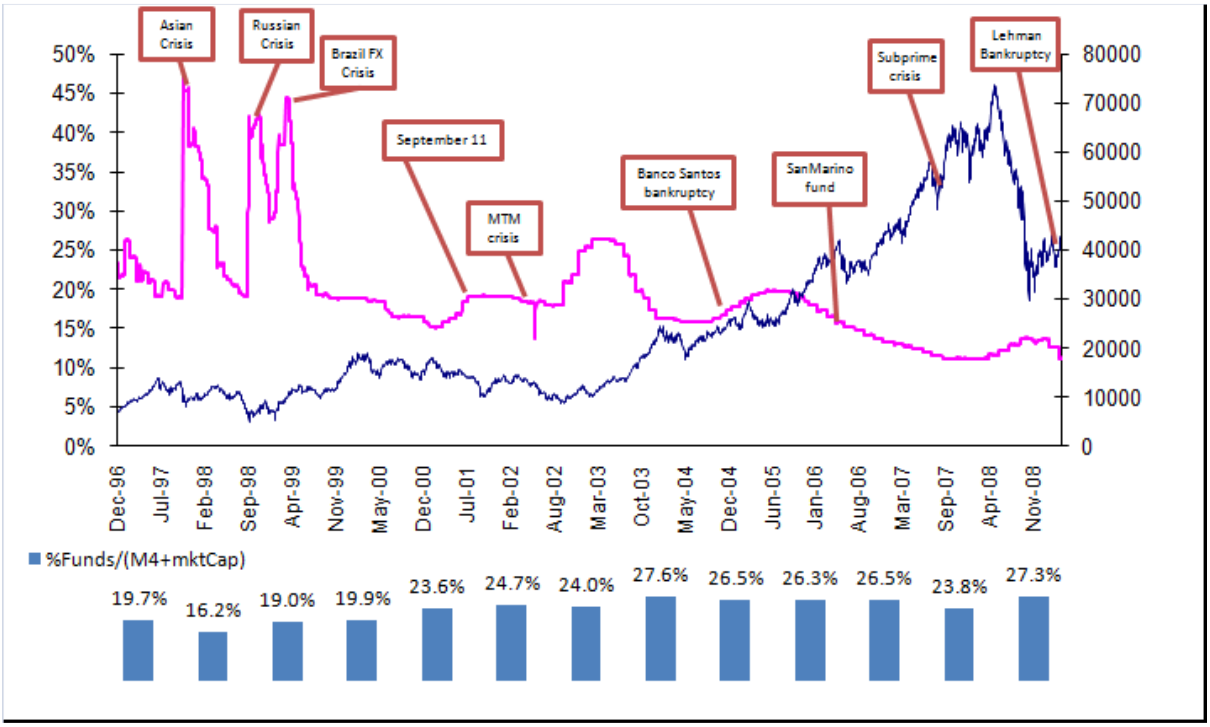

Figure 5. Evolution of interest rates based on CDI (thick line) and the Ibovespa value. Several crises are indicated on the graph. In the lower part, we show the evolution of the percentage of the fund's AUM over M4. Source: Quantum.

7. Explaining the growth

The Brazilian mutual fund industry has grown in size and complexity, becoming an important financial instrument in the local financial market. Its substantial growth usually is attributed to basic economic factors such as diversification, liquidity, professional management and lower transaction costs provided by these products. These are the reasons for the larger returns as well as the lower market and liquidity risk for investments in mutual funds vis-à-vis direct investments. Mutual funds also are a quasi direct investment because investors can view and track the actual portfolio within the fund, in contrast to bank deposits or savings accounts. Eventually investors can withdraw their money, but receiving some fund assets instead of cash, which may decrease the investor's perception of risk.

Klapper et al. (2004) conducted a world-wide study of the mutual fund industry and gave many reasons for its growth relative to a country's GDP. Their sample consisted of data from 40 countries obtained from local associations for the period 1992 to 1998. They noted its huge growth, 22.4% per annum in this period, and the increasing household participation in this market. For example, household participation in the USA increased from 6% in 1980 to 44% in 1998. They noted that the data from each country should be interpreted with care since the participation of non-financial companies can be extensive. For example, Brazil's large number of exclusive funds can result in erroneous conclusions because non-financial companies, which are the main investors in exclusive funds, have motivations for investing in funds that differ from those for individuals. They explained the industry growth by: the level of income and wealth, arguing that funds are a luxury good; the availability or not of substitutes and complementary products, for instance bank deposits versus money market funds; the well-developed markets for bonds and equities; the regulation of the investments by insurance companies and pension funds; the return and volatility of alternative instruments; non-neutral tax policies; the restrictions on interest payments in bank deposits, e.g., in the USA; and, transaction costs. Their investigation used fund size relative to GDP as the dependent variable. Their independent variables were:

- Level of economic development: development of the commercial banking sector (bank assets/total assets of banks and the central bank); openness (exports+imports/GDP); the ICRG index of country risk; high-tech exports as a share of total exports;

- Security market development: market turnover ratio and Market Cap/GDP;
- Financial stability;
- Regulatory effectiveness: voice and accountability and regulatory burden; and,
- Return on equities, return differentials on funds, and bank deposits.

Several academic studies (Khorana et al. 2005 and Ramos 2009) and practitioners (Fink 2008 and Pozen 1998) have given many reasons for the growth of the mutual fund industry relative to other assets. Khorana et al. conducted an extensive study based on a panel of 56 countries from 1996 to 2001 to explain the relative growth of the world mutual fund industry. Their sample showed that, among the 56 countries, Brazil was the nineteenth to launch an open-end fund. Regarding size, it was the eleventh in absolute size (excluding Luxemburg and Ireland which are major centers for offshore funds), the second largest in primary securities, and the tenth largest as measured by GDP. In comparison to the other countries, its equities sector was very small but it had a large bond fund sector. Their dependent variable was industry total assets relative to the primary domestic securities (which include equities, bonds, and bank loans). Their independent variables were economic and regulatory, and were divided into four groups: (1) laws and regulation (one would expect that funds grow when laws and regulations favors them); (2) supply-side characteristics; (3) demand-side characteristics; and, (4) trading market characteristics. Their findings were:

(1) Laws and regulation:
- A better overall legal environment leads to more financial investment but not necessarily via funds.
- Fund regulation and more supervision (controls on fund starting, advertising, custody, etc.) will give investor's higher confidence to invest via funds than investing directly, but excessive regulation can be bad due to increased costs. Regulation and supervision can diminish conflicts of interest by controlling the assets within the fund and monitoring the investors' investment objectives.
- The non-enforcement of insider trading rules has an adverse effect because it encourages investors to rely on professional managers instead of directly purchasing stocks.
- Taxes should be neutral. Funds grow relative to direct investments when benefited by taxes.
- Bearer securities make it easier to avoid taxes via direct investment.

(2) Supply-side:
- Higher barriers to entry in the fund industry (for instance higher costs to start a fund) are associated with a smaller industry.
- The banking sector is not important in the US and the UK funds industry, but is important in Brazil and continental Europe. More restriction on banks is associated with a relatively smaller equity fund industry and a more concentrated banking sector with a relatively smaller bond fund industry.
- The number of distribution channels is not statistically significant.

(3) Demand-side:
- Industry age is positively correlated with size and growth.
- Wealthier countries and more sophisticated investors are associated with a larger mutual fund industry.
- A pension fund system with more defined contribution plans has a positive effect on size because they invest more via funds than directly.

(4) Trading market characteristics:
- A lower trading cost is associated with a larger industry.
- Market liquidity and price transparency (for instance good mark to market) facilitate the liquidity provided by funds and are associated with a larger mutual fund industry.

Ramos (2009), in a more recent study, aggregated a database of 50,000 funds to investigate the industry's evolution. Her main finding with regards to the relative growth was the importance of competition. She found that new service of money management relative to the population is a significant variable in explaining the relative growth of this industry. She also found that the majority of the mutual fund industry is based on equity and bond funds, and countries with more developed fund industries have more equity funds than bond funds.

In a detailed description of the USA mutual fund industry evolution, Fink (2008) emphasized the role of the general evolution of financial markets with the creation of new securities, new distribution channels and laws to encourage savings for retirement. He also pinpointed specific situations that stimulated the mutual fund industry, for example, the tax advantages of opening funds during the 1930s, the encouragement of Individual Retirement Accounts (IRAs) and other retirement plans during the 1960s and 1980s, and the money market fund advantages over bank deposits during the 1970s.

In another detailed description of the mutual fund industry, Pozen (1998) lists these factors as key to the success of the mutual fund industry: high equity returns during the 1960s, 1980s and 1990s; new products, such as money market funds; favorable tax treatment for retirement plan during the 1960s; diversification effects that

stabilize the fund's value during bear markets; easy access to new markets; and, low search costs due to mutual fund advertising.

In this paper, we study the growth of mutual funds in Brazil with respect to the major assets available to investors. The nominal growth rate relative to the GDP is more related to the overall financial development and therefore is left for a future work. Based on all these analyses of the relative mutual fund growth around the world, we test the significance of several explanatory variables in a time series instead of a cross-section context. We include two dummy variables on the legal side: a dummy for changes in mutual fund regulation (FReg) and a dummy for tax changes (TReg). The first has a value one for each quarter when there is a change in mutual fund regulation, as described in section 2.1. These changes have increased disclosure and controls, dealt with conflicts of interest and certainly have increased fund management cost. They are a mixture of the variables used in Khorana et al. (2005) for laws and regulation. The second has a value of one if a tax change is beneficial to mutual funds and minus one if it is not beneficial. The taxation may be neutral or not, but the frequency of changes in taxes can be beneficial to the relative demand of funds because fund management companies tax directly, thereby diminishing the management cost of direct investment.

The complexity of the financial market may increase the types of funds, such as those from independent managers, and the demand for professional management. Therefore we use two variables to measure the growth of financial complexity, the duration of interest rate contracts (Term) and the notional traded in futures on the stock exchange (IbovFutSize). This latter variable also is a good measure of market liquidity, though both should have a positive impact on the mutual fund industry.

For the demand side of the model, we use several variables that are expected to have some impact. Since the demand for funds increases as a function of a country's wealth, we use GDP growth to measure this effect. Because financial risk may affect demand we use several variables for it: a dummy (Crisis) for a quarter in which a crisis occurred, as described in the last section; the slope of the term structure (TSS); stock market volatility (Vol); and, the value of foreign exchange (USD). Since search costs (see Pozen, 1998 and Sirri and Tufano, 1998) also should affect demand and past market returns facilitate this search, variables for interest rates (CDI) and stock market returns (Ibov) are included as proxies for these factors, because past return facilitates the search. Competition from bank deposits also should affect the demand for funds, especially in an industry dominated by banks, so a variable (CDRR) is included to measure return differentials between bank CDs and basic interest rates.

Variable	**Description**
FReg	A dummy for each month with fund regulation changes.
TReg	A dummy for each month with taxes changes.
Term	Largest term for interest rate contracts.
IbovFutSize	The notional traded in Ibovespa futures contracts measured in USD.
GDP	Gross Domestic Product.
Crisis	A dummy for each month with a financial crisis.
TSS	Term structure slope, long term minus short term interest rate measured by CDI.
Vol	Stock exchange volatility.
USD	The variation of USD/BRL.
CDI	Basic interbank interest rate known as CDI.
Ibov	Stock exchange return.
CDRR	Differential between Bank Time Deposit (CD) and basic government interest rate, which represents the riskless rate.

Table 25. Description of the explanatory variables. A detailed description of these variables is in appendix A.

Many other variables were not included either because they were not available or were not found to be significant in the studies presented above. We also test for lag effects. Using time series we determine how these variables affect the relative size of the entire mutual fund industry as measured by: 1) Total AUM of the industry divided by M4 plus stock market capitalization (MktCap); 2) The equity mutual funds total divided by stock market capitalization; and, 3) The fixed-income funds total divided by M4.

Table 26 presents the univariate regression of each of these variables against the relative size of the mutual fund industry measured by 1, 2, and 3 above. The sample has quarterly-observations data ranging from January 1997 to December 2008 totaling 48 observations. For simplicity, intercepts are not reported.

	Funds/(M4+MktCap)			Equity funds/MktCap			Fixed Income Funds/M4		
	Coefficient	p-value	adj. R2	Coefficient	p-value	adj. R2	Coefficient	p-value	adj. R2
FReg	-0.015	(0.51)	-2%	0.000	(0.91)	-2%	-0.015	(0.57)	-1%
TReg	0.005	(0.71)	-2%	0.000	(0.99)	-2%	-0.004	(0.89)	-2%
Term	**0.026 ***	**(0.00)**	**78%**	**0.001 ***	**(0.03)**	**9%**	**0.021 ***	**(0.00)**	**70%**
IbovFutSize	0.002	(0.69)	27%	0.000	(0.32)	0%	**0.002 ***	**(0.00)**	**17%**
GDP	0.287	(0.69)	-1%	0.000	(0.99)	-2%	0.234	(0.49)	-1%
Crisis	-0.021	(0.53)	-1%	0.002	(0.43)	-1%	-0.019	(0.52)	-1%
TSS	-0.605	(0.55)	6%	**0.055 ***	**(0.05)**	**4%**	**-0.522 ***	**(0.04)**	**6%**
Vol	**-0.301 ***	**(0.04)**	**18%**	**0.030 ***	**(0.01)**	**17%**	**-0.290 ***	**(0.01)**	**22%**
USD	**-0.724 ***	**(0.02)**	**10%**	0.039	(0.18)	1%	**-0.638 ***	**(0.00)**	**10%**
CDI	**-1.076 ***	**(0.00)**	**60%**	-0.003	(0.87)	-2%	**-0.929 ***	**(0.00)**	**58%**
Ibov	0.065	(0.70)	-2%	-0.038	(0.13)	5%	0.060	(0.76)	-2%
CDRR	-29.095	(0.39)	3%	-1.487	(0.43)	-1%	-25.077	(0.25)	3%
One period lagged									
FReg	-0.016	(0.35)	-2%	-0.001	(0.56)	-2%	-0.017	(0.52)	-1%
TReg	0.005	(0.73)	-2%	-0.001	(0.66)	-2%	-0.008	(0.76)	-2%
Term	**0.026 ***	**(0.00)**	**75%**	**0.001 ***	**(0.03)**	**11%**	**0.021 ***	**(0.00)**	**66%**
IbovFutSize	0.002	(0.50)	16%	**0.000 ***	**(0.03)**	**12%**	**0.001 ***	**(0.00)**	**8%**
GDP	0.252	(0.58)	-1%	0.016	(0.59)	-2%	0.220	(0.53)	-1%
Crisis	-0.032	(0.43)	0%	0.003	(0.42)	0%	-0.030	(0.31)	0%
TSS	-0.595	(0.87)	6%	**0.065 ***	**(0.00)**	**9%**	**-0.494 ***	**(0.05)**	**5%**
Vol	**-0.477 ***	**(0.00)**	**36%**	0.018	(0.13)	4%	**-0.439 ***	**(0.00)**	**40%**
USD	**-0.800 ***	**(0.00)**	**12%**	0.026	(0.44)	0%	**-0.700 ***	**(0.00)**	**11%**
CDI	**-1.003 ***	**(0.00)**	**51%**	-0.014	(0.43)	-1%	**-0.860 ***	**(0.00)**	**49%**
Ibov	0.199	(0.86)	0%	**-0.034 ***	**(0.10)**	**4%**	0.171	(0.39)	0%
CDRR	-34.893	(0.43)	6%	0.252	(0.84)	-2%	-29.859	(0.17)	5%

Table 26. Univariate regressions explaining the relative growth of the mutual fund industry. In columns 2 to 4, the relative size of the entire industry, then only equity funds and in the last three columns only fixed-income funds. All regressions were done via OLS; for simplicity the constant was omitted. *p*-values were calculated based on White standard errors to correct for heteroskedasticity because the dependent variable is a proportion. The sample ranges from January 1997 to December 2008, totaling 48 observations. * Significant at 10%.

The significant variables for the whole mutual fund industry are Term, Vol, USD, CDI and their lagged values. One variable (Term) has a positive effect while the other effects are negative. For the equity mutual fund industry the significant variables are Term, TSS, Vol, and the lagged Term, IbovFutSize, TSS, and Ibov, which is the only negative lagged variable. For fixed-income funds, the significant variables with positive effects are Term and IbovFutSize and their lags, while TSS, Vol, USD, and CDI as well as their lags have significant negative effects.

With greater market complexity, here represented by bonds with longer duration (the higher the value for Term), we would expect a larger mutual funds offering and a greater demand for funds vis-à-vis direct investments. The variable IbovFutSize and its liquidity effect also should have positive signs for the same reason; they both have the expected signs for all types of funds. The variable that represents crises is not significant, but the variables that represent risk—TSS, VOL and USD—are negative for the fixed-income funds analysis. In the equity funds analysis, TSS and Vol have a positive impact suggesting that investors shift to professional management in periods of high risk. The level of basic interest (CDI) has had a negative effect on fixed funds, suggesting that investors moved to the direct purchase of bonds instead of funds, which may be a consequence of the high fees charged in the short term by Brazilian funds. Surprisingly, the lagged Ibov, which is supposed to facilitate the search of funds, has a negative effect, contrary to the hypotheses advanced by Pozen (1998). This may be due to the instruments maintained in the equity funds, which in general hold approximately 20% of assets in short term bonds to maintain liquidity. When the stock market goes up 10%, the equity funds as a whole increase only 8%, thus creating a negative effect (-2%) in this variable. The tax and fund regulation changes have had no significant impact on relative growth, possibly because it takes more than one or two quarters to adjust the offerings of funds and also see changes in demand due to such changes. Also surprising is the non-significant effect of GDP, which Khorana et al. (2005) found to be significant.

The significant variables from the univariate analysis were tested in a multivariate context. Tables 27a, 27b, and 27c present the results of these analyses for the relative sizes of 1) the whole industry, 2) fixed-income funds, and 3) equity funds respectively.

	Funds/(M4+MktCap)				
	Mod_1	**Mod_2**	**Mod_3**	**Mod_4**	**Mod_5**
Constant	0,291	0,261	0,246	0,267	0,313
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
CDI	0,070			-0,216	-0,226
	(0,662)			(0,009)	(0,029)
Term	0,010	0,005	0,007	0,004	
	(0,23)	(0,001)	(0,000)	(0,012)	
USD	0,093				
	(0,302)				
Vol	-0,083		-0,095		
	(0,137)		(0,012)		
One period lagged					
CDI	-0,168				
	(0,173)				
Term	-0,005				
	(0,502)				
USD	0,033				
	(0,684)				
Vol	-0,079	-0,133			-0,100
	(0,242)	(0,000)			(0,083)
Adjusted R-squared	45,9%	47,1%	44,2%	40,9%	39,1%
Number of observations	48	48	48	48	48

Table 27a. Multivariate regressions explaining the relative growth of the whole mutual fund industry. Five models are presented. All regressions were conducted with OLS. p-values are shown below the coefficients in parentheses. Only variables found to be significant at 10% were used in the equations in models 2 to 5. The sample ranges from January 1997 to December 2008.

Most variables used in the univariate analysis lost significance when entered into the multivariate analysis. For the whole industry analysis, all dependent variables remained significant in all five models. In all models, the variables CDI, Term, Vol and lagged Vol maintain their signs but with smaller sizes. The variable representing risk (USD) loses significance in all models as does the variable Vol. Model 2 has the highest adjusted R2, 47.1%, without CDI and variable current Vol. Model 3 has a smaller R2 and lagged Vol is replaced by current Vol. Models 4 and 5 maintain CDI, lose either Vol or Term, and they both have a smaller R2. The variable CDI loses significance if Term and Vol are combined. It is possible that this is due to the higher short-term interest rates in periods of high volatility, also characterized by lower bond duration.

	Equity funds/MktCap						
	Mod_1	**Mod_2**	**Mod_3**	**Mod_4**	**Mod_5**	**Mod_6**	**Mod_7**
Constant	0.046	0.046	0.045	0.043	0.054	0.050	0.045
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TSS	0.015			0.071	0.074	0.049	
	(0.64)			(0.03)	(0.03)	(0.09)	
Term	-0.003	-0.002	0.001	0.002	0.001		0.001
	(0.02)	(0.02)	(0.00)	(0.00)	(0.01)		(0.00)
Vol	0.031	0.028	0.032	0.035		0.029	0.036
	(0.00)	(0.00)	(0.00)	(0.00)		(0.02)	(0.00)
One period lagged							
TSS	0.065	0.079	0.078				
	(0.03)	(0.00)	(0.00)				
Term	0.004	0.004					
	(0.00)	(0.00)					
IbovFutSize	0.000						
	(0.52)						
Ibov	-0.009						
	(0.50)						
Adjusted R-squared	50.9%	52.8%	48.3%	43.3%	18.8%	20.4%	33.8%
Number of observations	48	48	48	48	48	48	48

Table 27b. Multivariate regressions on the relative growth of the equity mutual fund industry. Seven models are presented. All regressions were conducted using OLS. Below the coefficients in parentheses are *p*-values. Only variables significant at 10% remained in models 2 to 7. The sample ranges from January 1997 to December 2008.

For the equity fund industry, only the lagged IbovFutSize and Ibov are not maintained in the multivariate analysis. Model 2 has the highest R2, but the sign for the variable Term became negative. When the lagged Term is dropped, the sign for current Term becomes positive, but with a lower R2 as shown in model 3. In models 4 to 7, there are several combinations of the non-lagged variables which have the same signs and similar sizes to the univariate analysis. Model 4 has the highest R2, with two variables (TSS and Vol) associated with market risk affecting positively the relative demand for equity funds. The bond duration also affects equity fund demand positively. These results are expected and for higher market risks and complexity (Term), we would expect more demand for professional management. Surprisingly, the variable representing market liquidity (IbovFutSize) and the lagged Ibov, which is supposed to facilitate the search of funds, have no significance.

Fixed Income Funds/M4			
	Mod_1	**Mod_2**	**Mod_3**
Constant	0.463	0.457	0.448
	(0.00)	(0.00)	(0.00)
CDI	-0.136		-0.467
	(0.29)		(0.00)
TSS	-0.243	-0.229	-0.434
	(0.09)	(0.05)	(0.00)
Term	0.010	0.017	0.017
	(0.10)	(0.00)	(0.00)
USD	-0.069		
	(0.59)		
IbovFutSize	-0.001	-0.001	-0.001
	(0.12)	(0.00)	(0.00)
Vol	-0.086	-0.117	-0.109
	(0.15)	(0.00)	(0.00)
One period lagged			
CDI	-0.266	-0.328	
	(0.04)	(0.00)	
TSS	-0.272	-0.234	
	(0.06)	(0.04)	
Term	0.008		
	(0.27)		
USD	0.044		
	(0.66)		
IbovFutSize	0.000		
	(0.76)		
Vol	-0.101	-0.117	
	(0.12)	(0.04)	
Adjusted R-squared	90.5%	91.1%	89.0%
Number of observations	48	48	48

Table 27c. Multivariate regressions explaining the relative growth of the fixed-income mutual fund industry. Three models are presented. All regressions used OLS. Below the coefficients in parentheses are *p*-values. Only variables significant at 10% remained in models 2 and 3. The sample ranges from January 1997 to December 2008.

For the fixed income mutual funds, we obtain a very high R2 of 91.1%. Few variables were deleted from these models: the current CDI, USD and lagged Term, USD and IbovFutSize. Only current IbovFutSize changes its sign to negative, which is surprising because this variable is associated with market liquidity. The variables associated with market risk have a negative impact on the relative size of fixed-income funds. A higher lagged short-term rate (CDI) or even the current one (as in model 3) has a negative impact on fixed-income funds. One local explanation for this effect is that the short-term rate (CDI) has been used by the BCB to control the capital flow and gain investors' confidence. When an adverse event occurs, the BCB usually increases the short-term rate, resulting in a lower value for long-term bonds and possible withdrawals from fixed-income funds in favor of safer assets (for instance, foreign assets). This may explain why the variable USD has a negative sign in the univariate regression.

The above analysis only considered the period after 1997. The sparse data available before 1997, show a substantial increase in the relative size of the mutual fund industry: the ratio of fixed-income funds to M4 grew from 4% in 1984 to 25% by 1995! It was a tumultuous period due to high inflation and the economic plans proposed to tame it. Three events that occurred during this period are particularly noteworthy: the passage of numerous new regulations targeting fixed-income funds; the end of inflation, which increased the diversity of available bonds; and, termination of bearer securities. Until 1995, the relative size of equity funds was small, 1%

of the market cap, but a large increase occurred between 1995 and 1998, when it grew to 7%, and it has remained around this size since then. This was a period of medium economic growth, some change in regulation, and certainly major changes in local financial products due to the end of inflation.

In summary, the availability of the small sample above made possible an initial investigation of time series behavior regarding the relative size of the mutual fund industry. Contrary to some of the international findings, our results do not show that GDP and fund regulation are significant components in the relative growth of the mutual fund industry. Even market liquidity, as measured by trading in stock futures (IbovFutSize), has a negative effect on fixed-income funds.

Our results suggest that financial market innovations can be an important explanation for the relative growth of the mutual fund industry, as reported by Fink (2008) and Pozen (1998). This is similar to the results of Ramos (2009), who suggests that industry age is not relevant, although overall capital markets development is relevant. Klapper et al. (2004) also observe that at the aggregate level, mutual funds and securities are complementary. A more developed securities market leads to a larger mutual fund industry. The results presented above support this observation.

8. Conclusion

The world's largest mutual fund industry is located in the USA. It has 46% of the world's mutual funds'total AUM and is 20 times larger than the Brazilian industry. Using the USA as a benchmark, we draw some conclusions about the Brazilian Mutual fund industry. They both grew in absolute terms, but in the USA it has grown faster than the banking industry, surpassing their total assets in 1999, which is not the case in Brazil. The growth of mutual funds in Brazil occurred rapidly compared to the rest of Latin America and the world, and has become by far the largest mutual fund industry in Latin America. The USA mutual fund industry, dating back to 1924, is much older than Brazil's industry which started in 1957. They both started with equity funds and only recently began to offer fixed-income funds; in the 1970s in the USA and in the 1980s in Brazil. Their institutional settings are different: The US industry is dominated by specialized investment companies whereas in Brazil the business is dominated by the asset management units of commercial banks. The degree of concentration is extremely high in Brazil, with the top five companies managing approximately 70% of the assets, while the top five companies in the USA manage approximately 18%. The distribution in Brazil is also dominated by banks, and there are very few brokers, financial advisors (except for wealth investors) and fund supermarkets. The asset classes are also quite different: In Brazil, fixed-income instruments dominate the industry but credit quality is not an issue because most of the bonds are issued by the government and the type of indexation differentiates fixed-income bonds. Equity funds dominate the US industry. The fees in Brazil are higher than in the US. The retirement market has affected both markets positively and indirectly via pension funds investments and directly via lower taxes for long-term investments.

Taxes have been especially beneficial to the Brazilian mutual fund industry for two reasons: (1) they have not been neutral when compared to direct investment, and (2) the tax system is so complicated that investing via mutual funds is much simpler for tax purposes.

The Brazilian mutual fund industry has several characteristics that are similar to the industries of continental European (see Otten and Schweitzer, 2002). The industries in each European country are concentrated in a few managing institutions (mostly banks) and instruments are concentrated in fixed-income type funds.

The industry concentration in banks can be explained by their scale, which makes them easily accessible to investors and the full menu of financial services they offer, but banks do not specialize in money management and have experienced difficulties with higher risk and sophisticated funds as well as with other sophisticated financial products. This explains the growth in the number of independent money managers in Brazil, which have been principal agents for higher risk and more sophisticated strategies via equity and multimercado funds. These managers also have implemented strategies well-known to international hedge funds.

The financial results, especially of independent managers, have been superior to the simple passive investment in the asset classes, besides introducing greater diversification possibilities for investors. Their growth also has created a larger number of investment managers that actively trade non-liquid assets, and has played an important role in the corporate governance of Brazilian companies, which certainly has contributed to economic development.

It is important to note that authorities have established several regulations to protect investors and to organize this industry in parallel with the industry's considerable development. Moreover, they have been

assiduous in supervising the activities of investment management which may explain the small negative repercussions of financial crises on the industry's growth.

A more formal examination of the relative growth of the mutual fund industry showed that financial innovations and market risk have had significant impacts. Tax and regulatory changes were not significant in explaining the relative growth of the industry. Stock market returns were not significant in explaining the growth in the relative size of equity funds, but interest rates did affect the relative size of fixed income funds.

Appendix A

- FReg: A dummy for each month with fund regulation changes. The changes are defined according to the day they officially are implemented by the BCB and the CVM. They are listed in section 2.1. Source BCB and CVM.
- TReg: A dummy for each month with tax changes. They are put in place as a law and approved by the Congress. The changes are defined according to the day they are officially in place. Source Andima (report on financial taxes changes).
- Term: is the largest term for interest rate futures contracts with a minimum of 5 trades per day. Source BM&F.
- IbovFutSize: is the total notional traded in Ibovespa futures contracts measured in USD. Source BM&F.
- GDP: is the real Gross Domestic Product variation. Source: BCB monthly report.
- Crisis: a dummy for each month with a financial crisis as described in section 6.
- TSS: is the term structure slope, long-term interest rate minus short-term interest rate. The long-term rate is the rate the variable Term and the short-term is the CDI. Source BM&F.
- Vol: is the stock exchange volatility. It is the annual volatility from the Ibovespa index, measured by daily return within each quarter. Source: Bovespa.
- USD: is the variation of USD/BRL. Source: BM&F.
- CDI: is the basic interbank interest rate. Source BM&F.
- Ibov: is the stock exchange index return. Source: Bovespa.
- CDRR: is the differential between Bank Time Deposit (CD) and basic government interest rate, which represents the riskless rate. The CD rate comes from the BCB monthly report and is based on the average rate offered by high credit-quality banks. The riskless rate is the selic rate (relatively close to the CDI).

References

Andima, daily report in http://www.Andima.com.br last accessed September 2009.

Banco Central do Brasil, Monthly Bulletin in http://www.bcb.gov.br, last accessed September 2009.

BOVESPA, IBOVESPA and IBX in http://www.bovespa.com.br, last accessed September 2009.

Brito, N., Neves, A., 1989. Desempenho recente de fundos de investimentos, in: Brito, N. (Ed.), Gestão de Investimentos. Editora Atlas, São Paulo (in Portuguese)

Brito, N., Taciro Jr., A., 2003. Evolução de valor, risco e probabilidade de default na carteira de LFT's e implicações institucionais: Uma síntese, in: Duarte Jr., A., Varga, G. (Eds.), Gestão de Riscos no Brasil. Keyword Editora, Rio de Janeiro (in Portuguese)

CETIP, statistics in http://www.cetip.com.br, last accessed September 2009.

Figueiredo, L., Tigre, L., 2006. Gestores independentes no Brasil: uma história de sucesso in: Leal, R., Varga, G. (Eds.), Gestão de Investimentos no Brasil. Keyword Editora, Rio de Janeiro (in Portuguese).

Fink, M., 2008. The Rise of Mutual Funds, Oxford University Press, Oxford.

Franco, D., Branco, G., 2006. Risco e retorno nos hedge funds brasileiros, in: Leal, R., Varga, G. (Eds.), Gestão de Investimentos no Brasil. Keyword Editora, Rio de Janeiro, (in Portuguese).

Fung, W., Hsieh, D., 1999. A primer on hedge funds. Journal of Empirical Finance. 6, 309-331.

Goldman, R., 1986. Brasil 1850:1984, Desenvolvimento Financeiro sob um Século de Inflação. Editora Harper & Row do Brasil, São Paulo. (in Portuguese).

Khorana, A., Servaes, H., Tufano, P., 2005. Explaining the size of the mutual fund industry around the world. Journal of Financial Economics. 78, 145-185.

Klapper, L., Sulla, V., Vittas, D., 2004. The development of mutual funds around the world. Emerging Markets Review. 5, 1-38.

Lobianco, L., 2003. O risco na legislação de fundos de investimento, in: Duarte Jr., A., Varga, G. (Eds.), Gestão de Riscos no Brasil. Keyword Editora, Rio de Janeiro. (in Portuguese)

Mutual Fund Fact Book, Investment Company Institute, in http://www.ici.org.

Neubert, A., 1997. Knowing your indexes: Background, definitions, and rules, in: Professional Perspectives on Indexing, ed. Frank J. Fabozzi, Frank J. Fabozzi Associates, New Hope, PA, pp. 54-66.

Otten R., Schweitzer, M., 2002. A comparison between the European and the U.S. mutual fund industry. Managerial Finance, vol.28, no.1, pp.14-34.

Pozen, R., 1998. The Mutual Fund Business. The MIT Press, Cambridge.

Ramos, S., 2009. The size and structure of the world mutual fund industry. European Financial Management. 15, 145–180.

Sharpe, W., 1992. Asset allocation: Management style and performance measurement. Journal of Portfolio Management. Winter, 7-19.

Sirri , E., Tufano, P., 1998. Costly search and mutual funds flows. The Journal of Finance. 53, 1589-1622.

Tesouro Nacional in www.tesouro.fazenda.gov.br.

Varga, G., 1999. Índices de renda fixa para o Brasil. BM&F Magazine. May (in Portuguese).

Varga, G., Wengert, M., 2003. Riscos comuns em fundos de investimentos, in: Duarte Jr., A., Varga, G. (Eds.), Gestão de Riscos no Brasil Keyword Editora, Rio de Janeiro, pp. 521-536. (in Portuguese)